



Louis F. Sander's



**Complete
Compilation**

January 1984 – December 1992



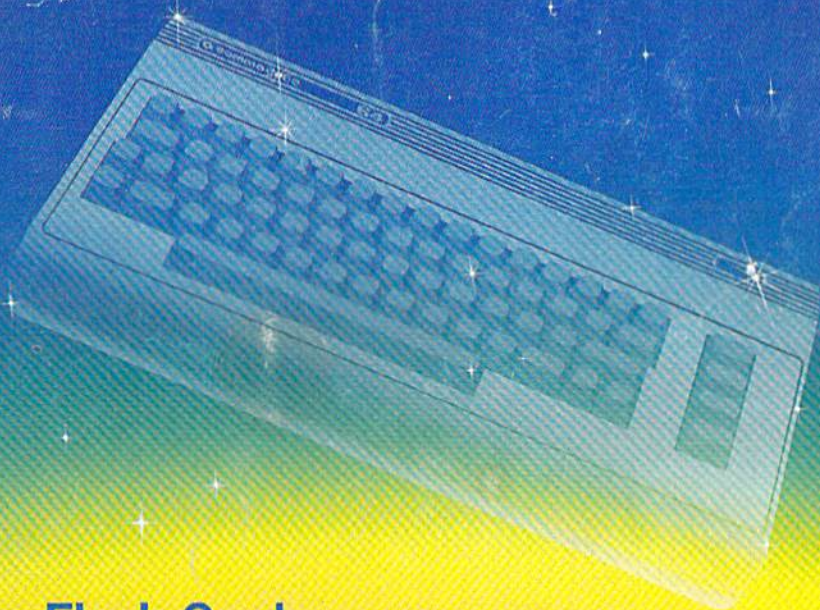
The Commodore 64 & VIC-20 Magazine

PREMIERE ISSUE

USA \$2.95
January 1984
A Wayne Green Publication

Arcade Challenge— *Ordeal in the Canyons of Zelaz*

Close Encounters with C-64 Word Processing



VIC's Video Flash Cards

Fun Action Games:

Sea Battle
Target Shoot
Symbol Code

Free—\$20 VIC Disk Program





Magic

We've summoned the mightiest spirits in the computing world to bring you this grab bag of useful hints, tips and techniques. These magical delights are designed to enchant you with wonderful ways to make the most out of your system. If you have conjured up any tricks of your own, send them in to this column.

Compiled by Louis F. Sander

*MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.*

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful subroutines, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort or theoretical knowledge.

MAGIC is your best and most complete source of pointers in practical computing, and is an international forum for sharing tricks with other computerists. Send your own tricks to:

*MAGIC
c/o Louis F. Sander
PO Box 15253
Pittsburgh, PA 15237
U.S.A.*

RUN will pay \$20 to \$50 for each trick we print.

Note: MAGIC's tricks are numbered in hexadecimal for your edification.



Trick \$00. This month's "one line special" is an antiquity—from the far-off days of 1978, when an 8K Commodore PET cost \$795, and readable documentation was unheard of. There weren't any books, and the only magazines were newsletters produced by amateurs.

The PET Gazette was one of them, and here is one of its early offerings, called "BURROW":

```
1AS = "[up][down][left][right]":PRINTMID$(A$,RND(.5)*4+1,1)
"*[left]";FORI=1TO30:NEXT:PRINT"[rvs on][space][left]";GOTO1
```

It fits on one 40-column line, and it *does* get exciting.

We'd like to see *your* one-line programs, and we want to print at least one good one each month. Programs can be fun, funny, useful or useless, as long as they fit in 40 columns or less. What do you have?

* * *

Trick \$01. You can fit lots of statements onto one program line by using the abbreviations for Basic keywords from the appendix of your user's manual. When the line is listed, the keywords are printed out in full, so your program line might take up more than the usual number of screen lines.

This is no problem, but if you try to edit the long line, your computer will cut it down to normal program line size. So use abbreviations to pack the statements into a line, but be *very* careful when editing it later.

Pittsburgh Commodore Group Newsletter

* * *

Trick \$02. All 16 Commodore 64 colors can be called up from the keyboard, but only eight of them are marked on the keys. If you put a 6-inch piece of masking tape above the number keys 1-8, you can mark it with the other colors to make your life easier.

The colors are called by pressing the Commodore Logo key simultaneously with a number key. From left to right, they are orange, brown, light red, dark gray, medium gray, light green, light blue and light gray.

L.F.S.

* * *

Trick \$03. On some TV sets, the VIC's screen display may not be centered quite right, resulting in a cut-off picture. Location 36864 controls the horizontal center of the screen (normally 5), and location 36865 controls the vertical center of the screen (normally 25). Changing these values can help you to properly center your display.

Westmoreland Commodore Newsletter

* * *

Trick \$04. The so-called "quote mode" can be maddening when your computer is in it, and *you* want to be out of it. You can usually get out of quote mode by typing another quotation mark, then deleting it.

But sometimes that doesn't work, such as when you're filling in the spaces opened up by the insert key. Those spaces behave as though the quote mode were active, even when it isn't, and typing another quote won't change anything. If you press any cursor control key when you're

on an inserted space, you invariably get the quote mode version of that cursor control, which is often not what you want. When you try to delete it, you get the reverse field T instead, which of course puts you deeper into trouble.

The solution? Press shifted return, which moves the cursor to the next line without "entering" the line you are changing. It also kills the quote mode on the inserted spaces, so you can put your cursor back up there and do whatever you please.

Tom Fetherston

* * *

Trick \$05. The mathematical expression between If and Then determines whether the rest of an If statement will be executed. When the expression is false, the rest of the line is skipped.

You can use this feature to save execution time. Rather than using a statement like 100 IF X = 1 AND Y = 2 THEN PRINT Z, it is much faster to write 100 IF X = 1 THEN IF Y = 2 THEN PRINT Z.

In the first case, X = 1 AND Y = 2 must be evaluated before any line skip decision is made. In the second, as soon as X = 1 is evaluated as false, everything else is skipped. The result is faster execution whenever X = 1 is false.

Bob McKinley

* * *

Trick \$06. Here's how you can time the execution of two similar pieces of code:

```
100 TI$ = "000000"
110 FOR I = 1 TO 500
120 Code to be tested goes here.
130 Etc.
140 Etc.
180 NEXT
190 PRINT TI
```

Run the program with one version of your code, and note the value of TI, which is the number of jiffies it took to execute 500 times. Then replace your test code with the other version and run the program again. The version taking fewer jiffies is faster.

L.F.S.

* * *

Trick \$07. When checking FRE(0) on the Commodore 64, you often get a negative number. (It doesn't mean you have negative available memory; it has to do with the way FRE represents numbers.) To convert the negative value to its proper form, do this:

```
PRINT FRE(0) + 2[up arrow]16
```

Also, there's nothing magic about the zero in FRE(0); you can put *any* letter or number in there. It's usually easier to find FRE(9) on the keyboard, and it gives the same result.

Eric Haver

* * *

Trick \$08. Use strips of Scotch Magic Tape to label your cassettes; they take pencil marks very well and can be easily

erased. But be careful to keep the eraser crumbs out of the tape and the tape deck.

L.F.S.

* * *

Trick \$09. Store your program tapes in Radio Shack # 44-608 soft plastic cassette mailers. They are tougher and less expensive than the hard plastic boxes.

Hashafisti Scratchi

* * *

Trick \$0A. Want to get your hands on a good computer book? Go to your local public library and talk to the people in charge. They *might* have just the one you're looking for. If they don't, they will welcome your suggestions.

If you get lucky, they'll enlist you as an unpaid computer book consultant, letting you help them by telling them what books to buy. They'll help *you* by taking your advice, which makes a lot of good reading material available to you.

By the way, be sure they know about the computer magazines that interest you—especially the new ones!

Mary Lee Resnick

* * *

Trick \$0B. Want a very readable, very comprehensive

guide to the world of computers? Want to learn about big systems as well as micros? If so, invest \$3.95 in Radio Shack's *Understanding Computer Science*. It's a tutorial on the big picture of computers in our world, and it's sure to add to your stock of useful knowledge.

L.F.S.

* * *

Trick \$0C. When saving a program on tape, add the RVS to your program name. Then when you read it back, it will print the name on a white background, making it easy to spot. Just type SAVE "[rvs on] PROGRAM NAME [rvs off]" [return].

The PET Gazette

* * *

Trick \$0D. If you have a program in memory and want to run it, you don't have to type the word RUN. Just type in any letter or letters (not numbers), then hit the shifted run/stop key. Your program will run for you.

The PET Gazette

* * *

Trick \$0E. If you have poked out the write-protect tab on a cassette, there are two ways you can override the protection. One is to put tape over the hole that you punched out. The other is to fool your Datassette into thinking the hole has been covered.

Open the Datassette cover and locate the small pin that fits into the empty hole. (It's way in the back, far to the left.) Then gently push the pin toward the back of the recorder and press the record button. Insert your tape and hold the record button down again as you press the play button.

The PET Gazette

* * *

Trick \$0F. You don't need to put parentheses around the number after a SYS statement. SYS828, SYS 828 and SYS(828) all mean the same thing to your computer.

L.F.S.

* * *

Trick \$10. Trying to put graphics or shifted letters into REM statements can be frustrating—they list in strange ways, usually as Basic keywords. To get them to behave, put them inside quotes.

The Transactor

* * *

Trick \$11. A fast way to tell if an integer is even or odd is to AND it with 1. If the result is zero, the integer is even; if the result is one, the number is odd. For the trick to work, your number must be in the range - 32768 to + 32767; otherwise you will get an illegal quantity error.

Westmoreland Commodore Newsletter

Circle 204 on Reader Service card.

When it saves you Time, it saves you Money...

it all adds up to a great addition!

Simply hook up ADDON to your Commodore 64. Then forget it. ADDON makes it easy for you to work with numbers. To add, subtract, multiply and divide them. It even has omnidirectional cursor keys for easy maneuverability. ADDON. Because Time is Money. And that's what counts. From:



801 S. Victoria Ave., Suite 105
Ventura, CA 93003 (805) 656-1330



The Commodore 64 & VIC-20 Magazine

Mosquito Alert: An Itchy Problem
Draw a Bead on the VIC Shooting Gallery

Finally, Functional Function Keys

USA \$2.95
February 1984
A Wayne Green Publication

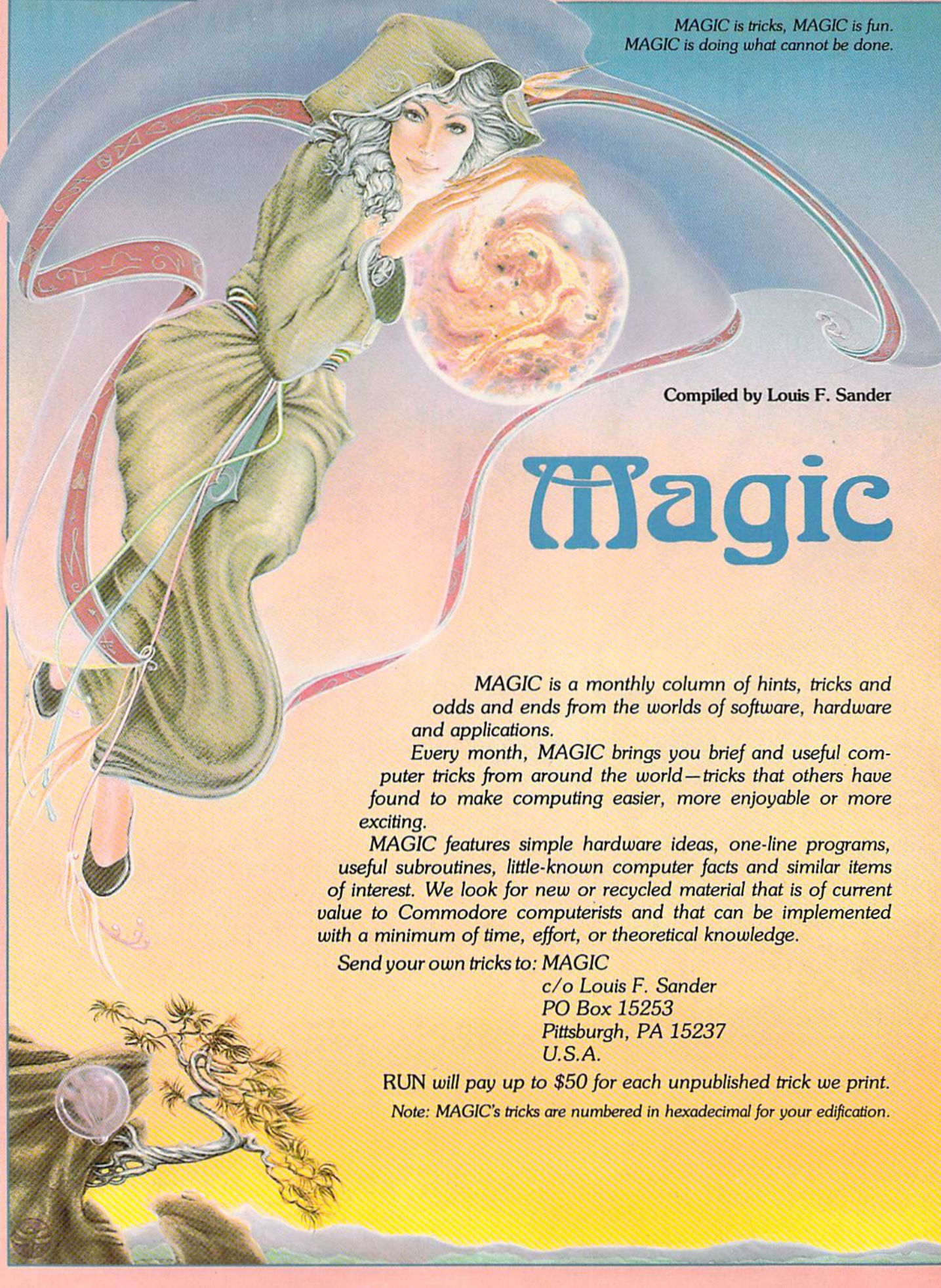
Driving Tips
For the 1541 User

Unleash Your Commodore's Graphics



Program of the Month—VIC-20/C-64 Database





MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Compiled by Louis F. Sander

Magic

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful subroutines, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge.

Send your own tricks to: MAGIC

c/o Louis F. Sander
PO Box 15253
Pittsburgh, PA 15237
U.S.A.

RUN will pay up to \$50 for each unpublished trick we print.

Note: MAGIC's tricks are numbered in hexadecimal for your edification.

This month we have a series of tricks to use when presenting information on the screen, plus some sorcery for hex/decimal and decimal/hex conversions. As usual, one-line programs and interesting antiquities have also been conjured up for your pleasure.

And remember, you can let your hobby help pay for itself by sending your good ideas to us. We print all sorts of useful information—tell us about your own tricks, and if we use them, we'll send you a check.

\$12 Detecting keypresses—When using GET to detect a keypress, the fact that previous keystrokes are saved in the keyboard buffer can be a nuisance. Often, when a game is finished, you will want the player to restart the game by hitting a key. Here is a common way to do it:

```
510 PRINT "PRESS ANY KEY TO RUN"
520 GET A$: IF A$ = "" THEN 520
530 RUN
```

Those lines will run the program again even if a key was hit *before* line 510 is executed. You can fix the problem by adding the line 500 FOR I = 1 TO 10: GET A\$: NEXT I.

You can do the same thing in *one* line by replacing lines 500–530 with this:

```
500 PRINT "PRESS ANY KEY TO RUN": POKE 198, 0: WAIT 198, 1: RUN
```

"POKE 198, 0" clears the keyboard buffer. "WAIT 198, 1" tells the computer to sit there and wait until a key is pressed.

Westmoreland Commodore Newsletter

\$13 Quotation marks—When using the Print statement with material enclosed in quotes, it is often acceptable to eliminate the second quotation mark. For example, the computer will treat these two statements just the same:

```
100 PRINT "MAGIC IS FUN"
110 PRINT "MAGIC IS FUN"
```

Eliminating the second quotation mark saves a byte of memory, a keystroke and a space on the screen line, which are all important from time to time. But be careful—the last letter of the material in quotes *must* be the last thing in the program line. Because of the GOTO in this statement, the second quote, 120 PRINT "ABRACADABRA": GOTO 120, must be retained.

Because of the semicolon after this Print statement, you also need the closing quote, 130 PRINT "LEGERDEMAIN";

L.F.S.

\$14 Semicolons—It is often acceptable to eliminate the semicolons between several items that are to be printed on the same line. As long as there is no ambiguity about where one item ends and the next begins, the semicolons are unnecessary. In this example:

```
140 PRINT A$; B$; C$; D$; "E"
```

the dollar signs and quote marks make it absolutely clear which item is which.

The line can easily be shortened to:

```
140 PRINT A$B$C$D$ "E"
```

The semicolon *must* be included in this line:

```
150 PRINT F; G
```

If it were removed, the computer would print the value of variable FG, which is not what is wanted.

L.F.S.

\$15 Commas—Putting a comma between two items in a Print statement causes the second item to be printed at the next preset "tab stop" on the screen. On the Commodore 64, there are four tab stops per screen line, while on the VIC-20, there are only two. Additional commas between the items cause additional tab stops to be skipped. If you want A and B to be printed at tab stops 1 and 4, here's a tricky way to do it:

```
100 PRINT A,,B
```

L.F.S.

\$16 Screen framing—Here's another "antiquity," this time from the first issue of an old newsletter called *The PET Paper* (circa 1978). The routine prints a frame around the screen of a Commodore PET, but it works fine for a C-64. If you change a few numbers, it will also work on the VIC-20.

```
3000 REM ** FRAME ROUTINE **
3010 PRINT "[clear]"; FOR I = 1 TO 39: PRINT F$;: NEXT I: PRINT "[cursor up]"
3020 FOR I = 1 TO 23: PRINT F$TAB(38)F$;: NEXT I
3030 FOR I = 1 TO 39: PRINT F$;: NEXT I: PRINT "[home]"
```

In this routine, F\$ can represent any character. You can replace F\$ in the routine with your favorite character (enclosed in quotes, of course) or change F\$ each time you draw the frame. For example: 40 F\$ = "X": GOSUB 3000.

But remember—if you use this routine as a subroutine, you must add a line 3040 Return, and you need an End statement somewhere above the routine so you don't fall into it as your program executes.

The PET Paper

\$17 Programmable Cursor Control—You can position the cursor anywhere on the screen by using a routine like this:

```
10 X$ = "[39 crsr rights]"; Y$ = "[24 crsr downs]"
100 X = 20: Y = 10: GOSUB 3000
110 PRINT "SORCERY"
2999 END
3000 REM ** POSITION CURSOR **
3010 PRINT "[home]" LEFT$(X$, X) LEFT$(Y$, Y);: RETURN
```

Variables X\$ and Y\$ should be set up early in the program and never changed. The code in Line 100 establishes the desired cursor position, then calls the subroutine in 3000, which positions the cursor on column X and line Y. (X=0 for the leftmost column, Y=0 for the topmost line.) On return from the subroutine, line 110 prints the

desired material at that position. Line 2999 prevents unwanted execution of the subroutine.

The PET Paper, Vol. 1, #1

\$18 More programmable cursor control—Once you understand the technique in Trick \$17, you can shorten things by eliminating line 10 and changing line 3010 to read:

```
3010 PRINT "[home]"LEFT$("[24 crsr downs]",Y)TAB(X)::RETURN
```

Kathleen Mead

\$19 Hexadecimal counting—To learn about the hexadecimal numbering system, it's helpful to count things in hex. That's why we number our tricks hexadecimally. (In case you haven't noticed!) The "pound sign" or "number sign" shows that what follows is a number, while the dollar sign is a widely-used convention to indicate hexadecimal notation. There's also a convention for indicating binary notation—the percent sign—but it's not seen so often.

L.F.S.

\$1A One-liner department—The first of two one-liners this month is a hex to decimal converter. It converts a four-digit hex number, expressed as string variable H\$, to its decimal equivalent, expressed as numeric variable D. It is as follows:

```
100 D=0:FOR I=1 TO 4:D%=ASC(H$):D%=D%*16+(D%>9)*7:  
H$=MID$(H$,2):D=16*D+D%:NEXT
```

To see the routine in action, add these two lines, then run the program:

```
50 INPUT "HEX";H$  
150 PRINT D
```

A.W. Grym

\$1B Another one-liner—A complementary one-liner is this decimal to hex converter, which converts decimal number D to its four-digit hex equivalent H\$:

```
200 H$="":D=D/4096:FOR I=1 TO 4:D%=D:H$=H$+CHR$(  
(48+D%-(D%>9)*7):D=16*(D-D%):NEXT
```

You can test the converter by adding it, plus 250 PRINT H\$ to the program in Trick 1A.

A.W. Grym

\$1C Connectors—When you attach external devices to your computer, you need special cables, which you can often make yourself if you have the right connectors. This trick identifies the connectors used on Commodore machines and gives specific information on finding them in stores.

The round connectors used for power, video monitor and disk/printer hookups are often called "DIN" connectors, after the German standards organization responsible for their design. DIN connectors are frequently used in audio equipment, especially that made in Europe, so connectors and patch cords can often be found in audio stores.

A good plug for the 5-pin audio/video monitor socket is the Radio Shack #274-003, available in any Radio Shack store. Six- and seven-pin DIN plugs for the disk/printer and power sockets are available at electronics parts stores carrying the Switchcraft PREH line of connectors. The 6-pin is Switchcraft #12BL6M, and the 7-pin is #15GM7M; current prices are in the \$2.50 range.

The Control Port, which accepts a joystick or paddle controller, takes a standard female plug known as the DB-9, made by many manufacturers. The Radio Shack #276-1538 will fit this port, and the optional #276-1539 hood will give the connection a nicely finished appearance. Each part costs about \$2.

The television connector on the Commodore 64 takes a very common plug known as a phono plug or an RCA plug. A variety of inexpensive phono plugs are stocked at Radio Shack, audio stores and wherever electronic parts are sold.

The Cassette and User Port connectors are called printed circuit board edge connectors. Edge connectors are made in a huge variety of types and grades, so finding the right one is like looking for a needle in a haystack. The ones for your Commodore are standard items for 1/4-inch-thick PC boards, with contacts on .156-inch centers. The User Port takes a 12-position dual-sided connector, while the Cassette connector uses a 6-position single- or dual-sided connector.

Give those specs to your parts man. He can tell you what he has, which might include a variety of types in a price range from \$2 to over \$10. The cheaper connectors are fine for your purposes, and you'll probably want the kind with solder lugs rather than wire-wrap pins or other special terminals.

A good User Port connector in the \$2 price range is the TRW/Cinch #50-24SN-9 or equivalent; a similar connector for the Cassette Port is the TRW/Cinch #50-12SN-9. If possible, also get a polarizing key for each connector. This key is a tiny piece of plastic that slips into the connector and fits into a slot cut in the PC board; it keeps the connector from being inserted upside down.

We couldn't find a source for Expansion Port connectors, which are male PC edge connectors. If you know of a source, tell us about it.

Victor H. Pitre

\$1D Color Pokes—It's easy to remember the poke values for the first eight VIC/C-64 colors—the poke is one less than the number on the color's key. BLK is on the 1 key, so its poke is 0; WHT is on the 2 key, so its poke is 1, and so on.

Margaret Ittel

\$1E Selecting disks—Commodore disk drives specify the use of soft sector disks, which are the type with a single index hole punched into the magnetic media. In reality, Commodore drives don't use the disk index hole at all, so they'll work with hard sector (many-holed) disks as well.

Paul Aitkenhead

®



The Commodore 64 & VIC-20 Magazine

**Meet TED: Commodore's Next Million-Seller?
It Will Change Your Computing Ways**

USA \$2.95
March 1984
A Wayne Green Publication
**Spreadsheets: How You Can
Cope with the Bottom Line**

C-64: In Search of the Tenth Planet

**KoalaPad vs. PowerPad:
Which One for You?**

**Plus: Serpent of Death, Mad Bomber,
Baja 1000 Game Programs**





MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Compiled by Louis F. Sander

Magic

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

To contribute to this column, send your own tricks to: MAGIC

*c/o Louis F. Sander
PO Box 15253
Pittsburgh, PA 15237
U.S.A.*

*RUN will pay up to \$50 for each unpublished trick we print.
For a Trick Writer's Guide, send a SASE to the above address.
Note: MAGIC's tricks are numbered in hexadecimal for your edification.*

Most of this month's tricks were submitted by readers of RUN's premiere issue, which hit the newsstands at Thanksgiving. Within a week, our P.O. Box was overflowing with cards and letters. As you will see, some of your fellow RUNners are ingenious souls, in the same class as Merlin, Blackstone, or Houdini. If they can do it, so can you—write up your tricks and send 'em in.

We are especially looking for material from club newsletters, and from diverse geographical locations. Useful short programs are also of special interest, and the shorter the better. Powerful one-liners are most eagerly sought. A one-liner is any program that can be entered as a single program line. (That limits it to 80 characters on the C-64, or 88 characters on the VIC-20. Keyword abbreviations are acceptable, but the best one-liners don't stoop to that.) How long do you think it will take us to get a trick from every state? From every continent? From a ship at sea? Not too long, I hope!

We receive many duplicates or similar tricks, so don't get upset if "your" idea shows up with someone else's name on it. Take it as proof that great minds run on parallel tracks, and as a challenge to be first next time.

We try to test each trick we publish, but that's not possible in every case. (Usually it's because we lack a piece of equipment.) When we haven't tested a published trick, we'll try to let you know.

We also work very hard to avoid typographical errors. All but the longest programs are keyed in from the typeset proofs, then run to see that they work as printed. Nature being what it is, errors are bound to creep in, and when they do, we'll print corrections.

\$20 Scrolling Stars—A nice scrolling effect for graphics or games can be achieved by the following short program:

```
10 A = RND(1)*23
20 PRINT SPC(A);"*"
30 FOR T = 1 TO 40:NEXT
40 GOTO 10
```

The time delay in line 30 can be changed to produce a different speed. For the C-64, change the 23 in line 10 to a 40.

Geoffrey Muehlberger
Atlanta, GA

\$21 More Scrolling Stars—The previous trick can be done as a one-liner:

```
10 FOR I = 1 TO 66:A = RND(1)*23:PRINT SPC(A);"*":FOR T = 1
TO 40:NEXT T,I
```

In this version, the 66 controls the number of stars printed; you can change it to any number you'd like.

Matthew C. Perry
Newport, RI

\$22 Super Expander—Super Expanders are not always compatible with the custom characters and other programs for the unexpanded VIC. With the following few Pokes entered before a program is run, you never have to remove or disable the Super Expander. Better yet, make it the first line of every program. For two-part programs, place it in the second program:

```
POKE 51,0: POKE 55,0: POKE 52,30: POKE 56,30: POKE 646,6
```

What's more, none of the extra memory is affected. It's also "harmless" for the unexpanded VIC. (Untested.)

Robert M. Bleich
Graham, WA

\$23 Delay Loops—To put time delays in programs, I prefer using the internal time clock to a For-Next loop. By using the TI function, I know just how long the delay will be. For example, for a two second delay, use two program lines like these:

```
310 T = TI
320 IF TI < T + 120 THEN 320
```

To get a shorter or longer delay, change the 120 to a smaller or larger number. Every difference of 60 will make a one second difference. Use 30 for a half second, 90 for 1.5 seconds, 180 for three seconds and so on.

Some other uses I have found for the time function are:
(1) Control the length of time something is left displayed on the screen.

(2) Control the amount of time allowed for input when using the GET statement.

(3) In some game or education programs, calculate the length of time required for input and give a score for speed.

Ed Heinen
Bison, KS

\$24 Repeating Keys—on C-64 or VIC, POKE 650,128 makes all VIC or C-64 keys repeat, just like the cursor keys. POKE 650,127 disables repeat of all keys, including cursor and space. POKE 650,0 returns things to normal, which means that repeat is enabled on Space bar, CRSR UP/DN, CRSR RT/LEFT, and INST/DEL keys.

Rob Jacob
Jones, MI

\$25 Cold Starting—To cold start a VIC-20, use SYS 64802. To cold start a C-64, use SYS 64738. (Cold starting is the same as turning the computer off then on but saves wear and tear on the hardware.)

Scott Killen
Charleston, SC

\$26 Headings—Here's how you can make a heading at the beginning of a program when you list it:

```
0 REM ""[DELETE][RVS ON]TTTTTT[RVS OFF]NOW TYPE THE
HEADING
```

Douglas J. Coffman
Portage, MD

\$27 Screen layout aid—Having trouble laying out your graphics on the screen, or designing a sprite that looks like what you want it to? Try taping a piece of waxed paper or tracing paper in front of your monitor, and drawing directly on it what you want to reproduce graphically. You can still see through the paper, and can position your characters behind the lines you've drawn.

Bruce Jaeger
St. Paul, MN

\$28 Keyboard hint—If you're not an excellent typist, odds are that the most used key on your keyboard is the INST/DEL key. Take one of those self-adhesive rubber feet that are sold in electronics stores, and stick it on top of the INST/DEL key. Now you can stab for it blindly, and hit it any time, without accidentally hitting the CLR/HOME key!

Bruce Jaeger
St. Paul, MN

\$29 Function keys—Using the function keys can be greatly simplified by setting string variables equal to the CHR\$ codes early in the program. When you need the function keys later on, all you have to do is use the proper variable.

For example, put these lines at the beginning of the program:

```
10 F1$ = CHR$(133):F3$ = CHR$(134):F5$ = CHR$(135):F7$ = CHR$(136)
20 F2$ = CHR$(137):F4$ = CHR$(138):F6$ = CHR$(139):F8$ = CHR$(140)
```


Then, when you use a Get routine, it can look like this:

```
1000 GET AS: IF AS = "" THEN 1000
1001 IF AS = F1$ THEN xxx
1002 IF AS = F2$ THEN yyy
1003 IF AS = F3$ THEN zzz, etc.
```

This technique helps reduce errors and debugging time, since you enter the character codes only once, and the numbered variables make it easy to tell which function key triggers which program branch.

Landon White
Des Moines, IA

\$2A Cassette tapes—Always use C-5, C-10, or C-20 cassette tapes for your computer programs. These short tapes are especially made for computers, and if you lose the tape, damage it, or expose it to something magnetic, you won't be losing as many programs as you would if you used 30, 60, or 90 minute cassettes.

Greg Osysko
Palatine, IL

\$2B Debugging tip—When you get an ?ILLEGAL QUANTITY ERROR in Data statements, just put a temporary Print statement between the Read and Poke statements, like this:

```
10 READ A: PRINT A: POKE I,A
```

When the program hits the illegal quantity, you know that the last value printed is the bad one. Then you can easily locate the problem and repair it, without searching through all the Data statements.

Roy McMahon
Imperial, PA



\$2C Typing tip—To avoid the woozy feeling you get when looking back and forth from keyboard to magazine when typing in a long program listing, and to cut down on mistakes from losing your place, use a voice-cassette recorder. Read the program into the recorder slowly and distinctly, then play it back and type in the program as you read it to yourself!

Karen Rhodes
Orange Park, FL

\$2D List disable—At times you may write a program that you don't want listed by other people. Perhaps you are a teacher and don't want your programs listed by students. There is a magic REM statement that does this.

On the first line that you don't want listed, put REM [shifted L]. When it tries to list the shifted L, the computer

will display ?SYNTAX ERROR and return to the Ready mode. The person might then try to erase the line. To prevent this, put other important statements on the same line before the REM. For example:

```
10 A = 7768:B = 2:REM[shifted L]
```

If the person erases the line, the program will not work properly. (To be *really* tricky, try combining this idea with the one in trick #26!)

Rick Wyman
Hampden, MA

\$2E Debugging tip—When "crunching" programs, it is possible to put together a keyword and a variable name that will form another, unwanted, keyword. If this occurs, you will get a syntax error. In order to avoid this, you need only put a space between the letters forming the unwanted keyword. For example: IFC=FORC=BTHEN 100 should be IFC=F ORC=BTHEN100, and FORI=STOP should be FORN=S TO P

Mark Dancheck
Whitehall, PA

\$2F VIC video—On some TV sets with automatic fine tuning, the screen will flutter when the computer is turned on. Try POKE 36864,133 to stop it. In many cases, this will stop the flutter immediately.

Thomas Ulatowski
Caledonia, NY

\$30 Abbreviating zero—When a variable is assigned the value zero, such as in the statement A=0, the zero character can be replaced by a decimal point! The computer will interpret the decimal point as a zero, and will evaluate the expression about 20% faster than if you had used the zero character.

You can use this trick wherever a zero is needed by itself, but not when the zero is part of another number, like 1000.

The Transactor

\$31 Bytes—A byte is the elementary unit of computer storage, and can be thought of as equivalent to one character. A kilobyte, or K, is 2¹⁰ bytes, or 1024 bytes. A megabyte is 1024K, or 1,048,576 bytes.

There are about 2000 characters on a double-spaced typewritten sheet of paper, so we could store all the information on such a page in about 2K bytes of memory. One floppy disk in a Commodore 1541 drive can hold about 175K bytes, or the equivalent of about 88 double-spaced typewritten sheets of paper. Many hard disk drives can hold 10 megabytes of information, or about twice as much text as in the King James Version of the Bible.

Computer Kindergarten
Pittsburgh, PA

\$32 Subscripted variables—When using subscripted variables such as A(4), the operating system automatically reserves 11 elements without having to declare a dimension with DIM. (Elements 0 through 10 inclusive.)

If, however, you are short of memory and are using fewer than 11 elements per variable—say four—it will save memory if you dimension the array. For example:

```
10 DIM A(4),C$(3)
```

The Transactor

RUN

The Commodore 64 & VIC-20 Magazine

The Psychic 64: Will You Fall Under Its Spell?

USA \$2.95

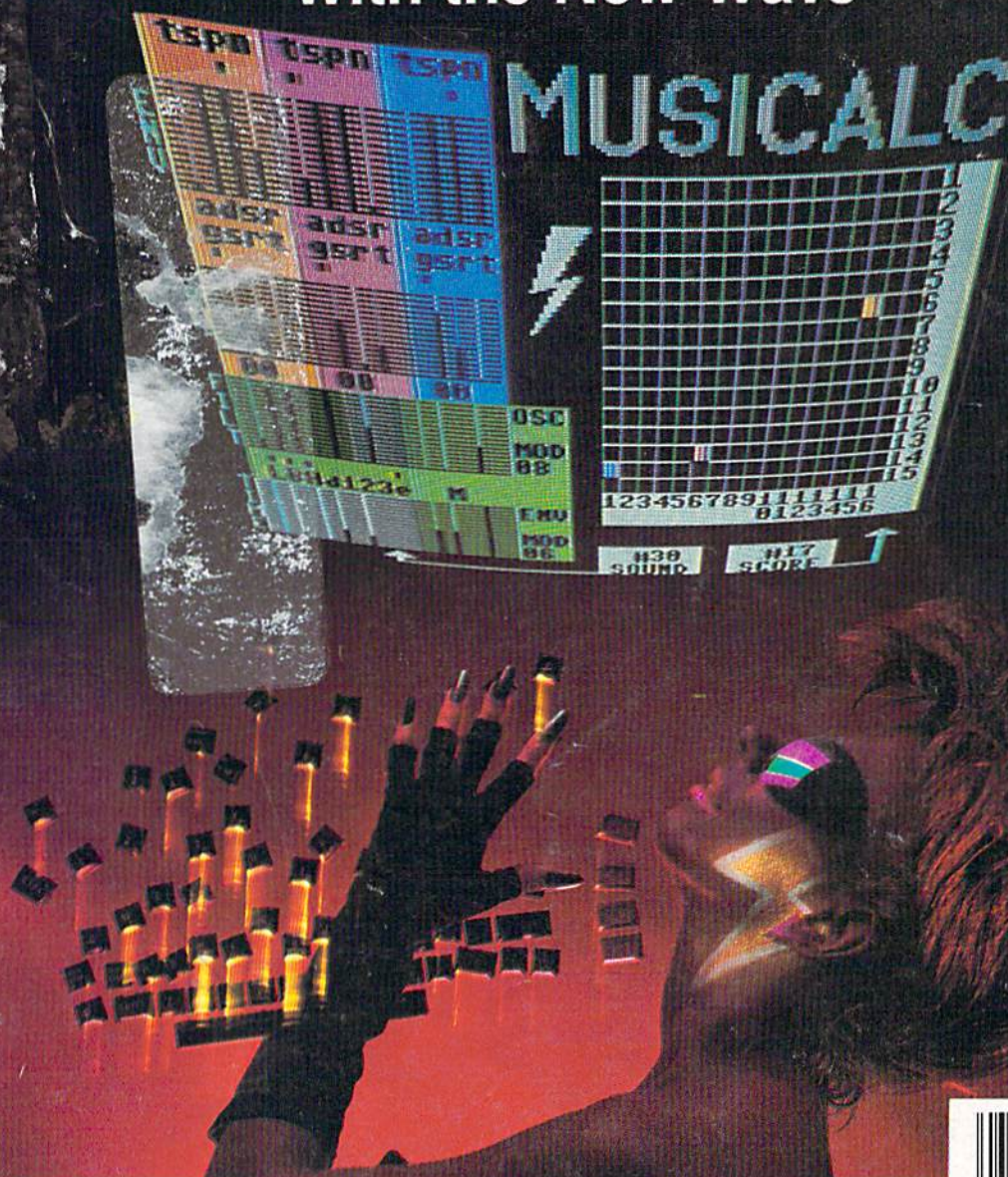
April 1984

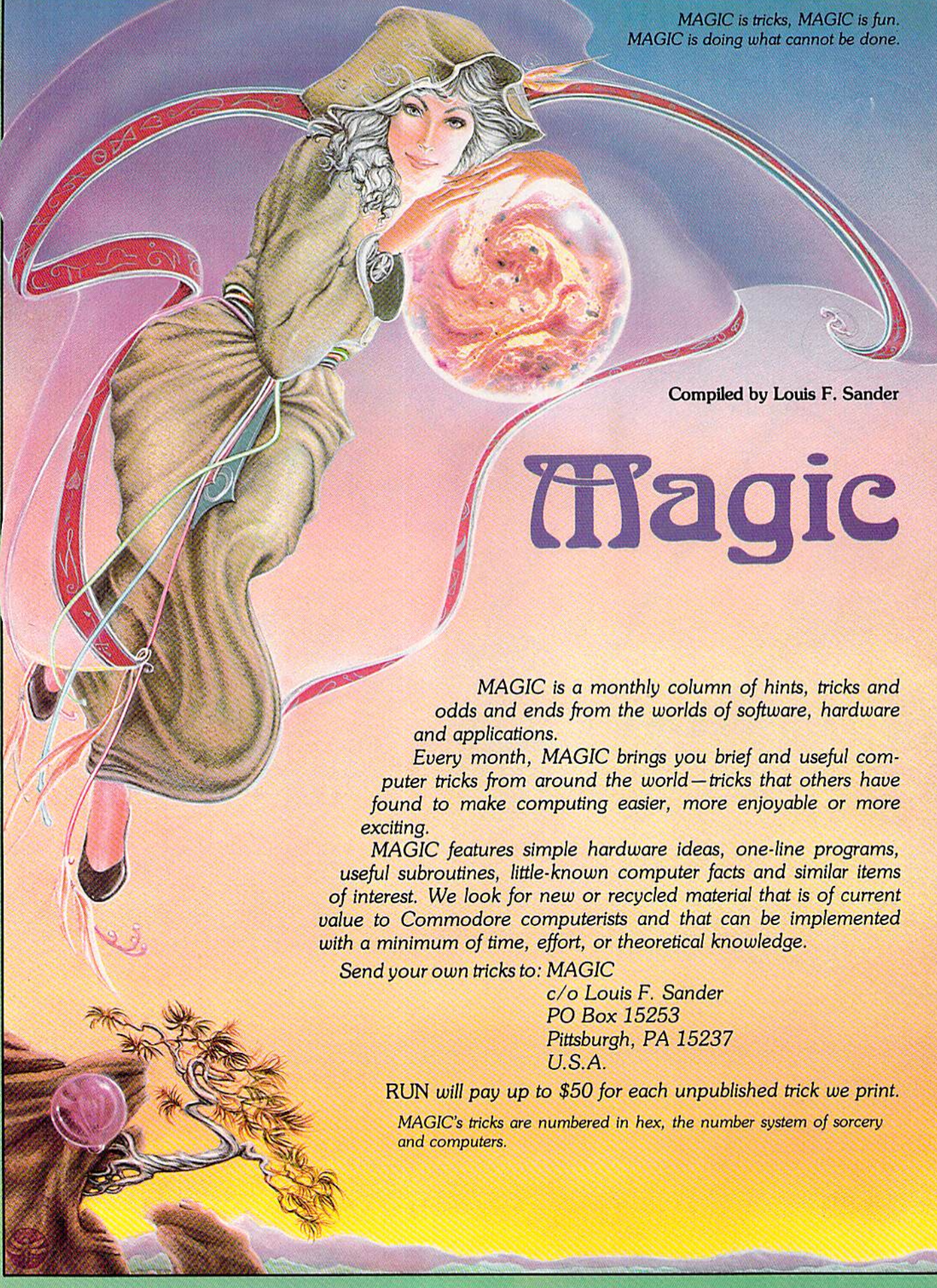
A Wayne Green Publication

Program of the Month
Disk Editor 64

Get Your Commodore in Tune
With the New Wave

MUSICALC





MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Compiled by Louis F. Sander

Magic

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful subroutines, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge.

Send your own tricks to: MAGIC

c/o Louis F. Sander
PO Box 15253
Pittsburgh, PA 15237
U.S.A.

RUN will pay up to \$50 for each unpublished trick we print.

MAGIC's tricks are numbered in hex, the number system of sorcery and computers.

This month, most of our tricks are for handling magnetic media and for typing and using the keyboard. These topics are of widespread interest, and of course our readers are dealing with them in *most* creative ways.

A veritable river of tricks is flowing into our box, and from what we can tell, readers really appreciate this part of the magazine. If you'd like to see your own trick in *RUN*, send it in and see what happens. We read every trick, and we print all the good ones we can find room for. *MAGIC's* Trick Writer's Guide, full of tips for authors, is available for an SASE.

\$33 Reset buttons—One thing that many people like to add to the VIC and C-64 is a reset switch. The reset line comes out to several connectors on both machines, and if you rig a momentary switch to ground it, you'll have a reset button. The preferred approach is to wire the switch to a separate connector, which you plug into the machine as needed. The undesirable alternative is to solder a switch directly to the computer. This may make it hard to get repair service, should you ever need it.

Resetting either machine restarts it with the familiar bytes free message, which you see when you first turn on your computer. Basic's pointers are reset to their power-up values, but user memory isn't disturbed. So a reset gets the computer out of any bizarre states you've put it in, and gives you a chance to recover your program. You have three choices on connecting the switch.

First, on either machine, between pins 2 and 6 of the serial I/O port. This is a good choice, because the connector can be inserted only one way, and because this port is available on the computer *and* on the disk drive, if one is connected.

Second, on either machine, between pins 1 and 3 of the user I/O port. This is less desirable because some user port connectors can be inserted upside down, wiring your switch to an unintended, potentially disastrous, place.

Third, between pins A and C of the C-64 expansion slot, or between X and Z of the VIC expansion slot. Depending on your connector, this method may or may not share the hazards of the one above.

Tom Hoppe
Spokane, WA

\$34 More on connectors—Radio Shack stores carry two blank circuit boards that fit the VIC's expansion port: #276-152 or #276-154, each selling for under \$4. The #276-1551 is a matching 44-pin, 22-position socket, and you can make a nice motherboard by mounting several of them on one of the blank boards.

If you don't have a local source for user port or cassette connectors, you can cut up a #276-1551 and make an acceptable substitute. Use a hacksaw, and carefully cut off a 12-position section from one end and a 6-position section from the other. Discard the extra 4-pin section, which will probably be rather hacked-up anyway. If you use care in inserting your new single-ended connectors, they can give good service until you locate something better.

Dick Halapin
Apollo, PA

\$35 Cassette tip—There is no need to advance your cassettes past the plastic leader before doing a Save. Commodore computers start every Save by recording ten seconds of programless leader tone, allowing plenty of time for the magnetic part of the tape to appear in front of the record head.

Thomas McClary
Hollywood, CA

\$36 Cassette loading—If you are getting numerous Load errors when trying to load a tape, try moving the datasette farther away from the computer and monitor. It may put an end to your troubles.

Richard D. Bailey
Bronx, NY

\$37 Tape library hint—Saving different types of programs on the same tape can lead to a lot of searching for the right tape and program. Try saving one type of program on one tape, and a different type on another tape. For example, reserve one tape for games and another for home-financial programs. This technique will help you find and load your programs much faster. You will also enjoy seeing your program collection grow while feeling organized.

Stephen Morse
Northfield, MA

\$38 Disk hint—If a floppy disk has been exposed to cold temperatures for any length of time, it must be allowed to slowly warm to room temperature. If you record on a cold disk, you may not be able to read it when it is warm. A prerecorded disk may also cause problems when cold. Always allow your disks to warm slowly to room temperature, never using any sort of artificial heat source. You should use similar precautions with disks that have become overly hot for some reason.

Tom Skantar
Pleasant Unity, PA

\$39 Disk care—To help prevent damage to your disks (dust, smoke, spills, etc.), store them individually in Ziploc sandwich bags. These bags are waterproof and transparent, and their small cost is well worth the protection they give.

Ed Moore
Portland, ME

\$3A Disk storage—K-Mart and other stores have a \$2 plastic 8-track tape storage box that nicely holds up to 60 disks. The box has a 4½" × 12-inch opening, and two rows of disks will fit perfectly if they are inserted crosswise to the direction intended for the 8-track tapes. There's also a plastic lid to keep the dust out. The K-Mart stock number for the box is C-12 or XC-12, and it's made by Soho Corp., P.O. Box 20081, Ferndale, MI 48220. If you can't find the box in your local store, ask the manager to get it for you. If that fails, write to Soho and ask for the name of a local dealer (they don't sell to consumers).

Tom Reigle
Shattuc, IL

\$3B Disk flipping—It is possible to use both sides of a disk, if you're willing to cut a new write protect notch and

to take a few chances with reliability. Disk drives read the bottom side of the disk (the unlabeled side), and disk manufacturers test and guarantee the quality of the magnetic coating on that side.

The top side of the disk is also coated with magnetic material, and even though it isn't guaranteed or tested, in many cases it works perfectly well. The only thing that prevents you from using it is the absence of a write protect notch in the proper place. If you cut one with a razor blade or sharp scissors, *voilà!*, you have a flippable floppy disk. It's good to use a second disk, flipped over, as a template for cutting the notch. The new notch goes just opposite the old, in the area where the manufacturer's label is usually placed. To use the top side of the newly-notched disk, just insert it upside down into your drive (oval read-slot first, manufacturer's label downward).

There are some warnings. It's possible that your new disk surface has some flaws in it, and if it does, it's likely that you'll lose some data. Also, flipping a disk changes its direction of rotation with respect to the jacket, possibly releasing some of the contaminants the jacket has scrubbed from the magnetic surface.

Disk manufacturers advance these and other reasons against flipping disks. Computerists often successfully disregard them. It's up to you to decide whether the saving is worth the risk, and to act accordingly. After all, when you dabble in magic, you also dabble in *danger!*

David William Vernham
Michigan State University

\$3C Locking disk files—Program and data files on a Commodore disk can be locked against accidental deletion or modification by using the Rename command to add a shifted space (represented here as -) as the first character of the filename. The unexpected result is that in the disk directory “-FILENAME” will become ““FILENAME. Attempts to scratch “FILENAME” will produce a File Not Found error, while attempts to scratch ““FILENAME will give an Illegal Quantity error, preventing the file from being scratched. The same holds true for all other disk commands, except those using the wild card (*), which will, of course, match anything. The locked program or file can be loaded by including the shifted space in the filename: LOAD“-FILENAME”,8. It can be unlocked by renaming

it and deleting the shifted space. This trick works on all Commodore disk drives, and with all Commodore computers.

Garold R. Stone
Annapolis Jct., MD

\$3D Key sensing—Memory location 653 can be used to sense the status of three non-printing keys on the VIC or C-64. The usual value in 653 is zero, but it changes when these keys are depressed:

shift key = 1
Commodore key = 2
CTRL key = 4

The values are additive; Shift/CTRL will generate a five, Shift/Commodore, a three and so on. You can examine this feature in detail by typing:

```
10 PRINT "[clear]"PEEK(653) : GOTO 10
```

Run the program and press the various keys.

Quyen N. Truong
Address unknown

\$3E Keypress detection—The content of memory location 197 is determined by the key that is pressed at any given instant, and that fact can be used to advantage in programming. If no key is pressed, PEEK(197)=64. Other keys change the Peek, but to different numbers on the C-64 and VIC-20. Table 1 gives the values for both machines. If several keys are pressed at once, 197 will respond to the key with the highest value in the table. Memory location 203 holds the same value as 197, so you can use the two interchangeably.

Notice that these locations don't respond to the shift, control, Commodore, or restore keys.

Tom Hoppe
Spokane, WA

\$3F SAVE@ replaced—The 1541 disk drive's Save and Replace command (SAVE"@0:NAME") is useful when you are developing a program, because it lets you save successive versions of the program without changing its name each time. Unfortunately, the Save@ command has a bug that occasionally causes some *other* file to be replaced with the updated program. One solution is to avoid

KEY	C-64	VIC	KEY	C-64	VIC	KEY	C-64	VIC	KEY	C-64	VIC	KEY	C-64	VIC
A	10	17	N	39	28	1	56	0	←	57	8	f1	4	39
B	28	35	O	38	52	2	59	56	+	40	5	f3	5	47
C	20	34	P	41	13	3	8	1	-	43	61	f5	6	55
D	18	18	Q	62	48	4	11	57	£	48	6	f7	3	63
E	14	49	R	17	10	5	16	2	@	46	53	SPACE	60	32
F	21	42	S	13	41	6	19	58	*	49	14	RETURN	1	15
G	26	19	T	22	50	7	24	3	↑	54	54	STOP	63	24
H	29	43	U	30	51	8	27	59	:	45	45	HOME	51	62
I	33	12	V	31	27	9	32	4	;	50	22	DELETE	0	7
J	34	20	W	9	9	0	35	60	=	53	46	CRSR DN	7	31
K	37	44	X	23	26				,	47	29	CRSR RT	2	23
L	42	21	Y	25	11				.	44	37	NO KEY	64	64
M	36	36	Z	12	33				/	55	30			

Table 1. Values of PEEK(197) for various keys on C-64 and VIC-20.

May 1984

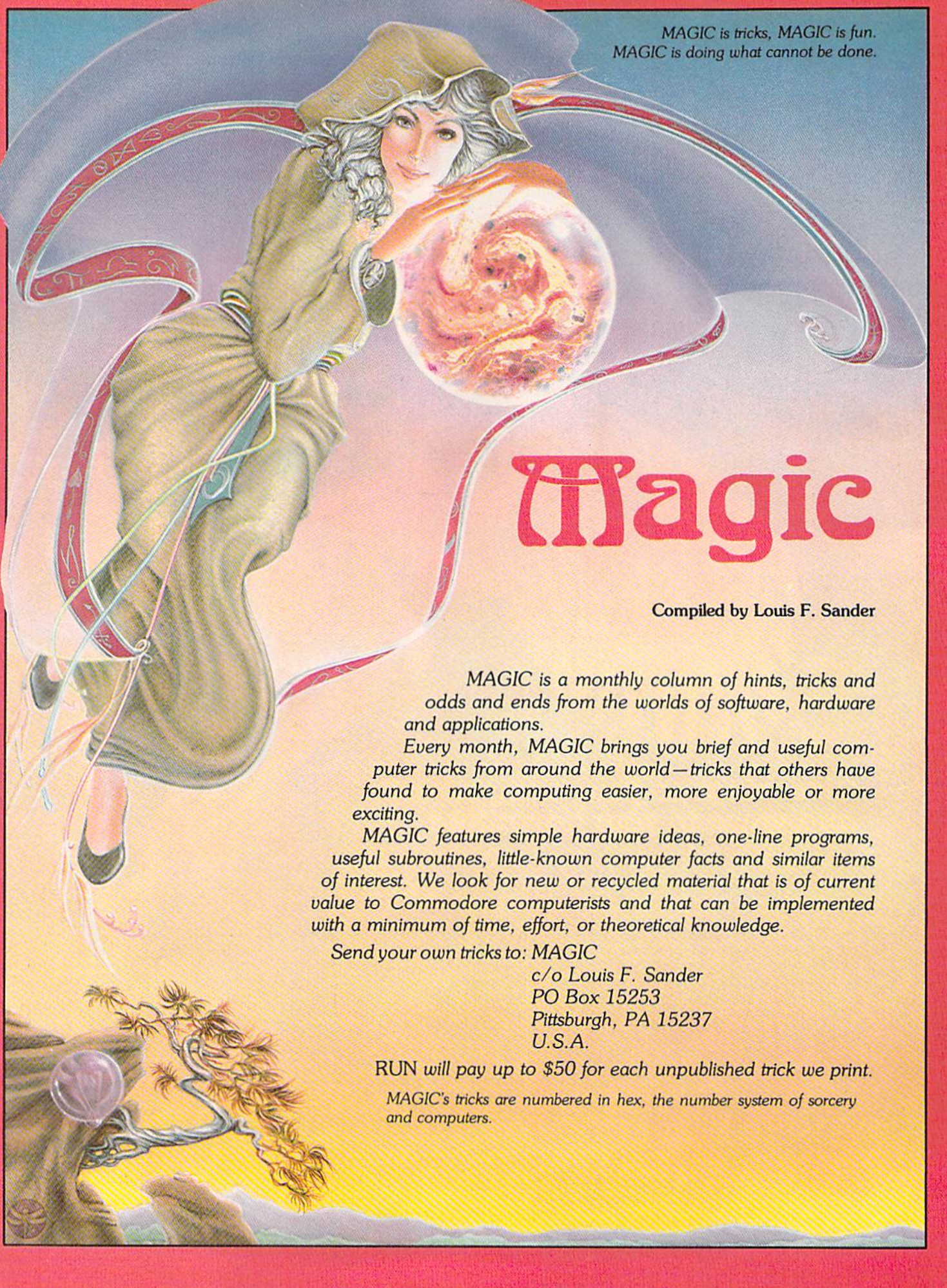
Get Organized!
Put a Little Database in Your Life

Program of the Month Magic Music Maker



Can You Survive the Attack of the Deadly Dragons?





MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Magic

Compiled by Louis F. Sander

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful subroutines, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge.

Send your own tricks to: MAGIC

c/o Louis F. Sander
PO Box 15253
Pittsburgh, PA 15237
U.S.A.

RUN will pay up to \$50 for each unpublished trick we print.

MAGIC's tricks are numbered in hex, the number system of sorcery and computers.

Most of this month's tricks are for entering programs or using peripherals. There's also a group that can make you the Merlin of the REM statement, and a few slick one-liners. Altogether, a *most* interesting group.

The final results are in from *RUN's* premiere issue—MAGIC inspired 330 pieces of correspondence, containing a hundred publishable tricks! And subsequent issues have had even better response. We're trying to print as many of your tricks as possible, within the limits of time and space.

Trick selection is based on usefulness, originality and length (the shorter the better), and we typically pay \$5-\$10 per trick. The really *super* ones get \$20 and up. If your own ambitions include word sorcery, send an SASE for our Trick Writer's Guide.

\$43 BURROW, MK II—C-64 owners who enjoyed BURROW, our very first trick, will like this one. Put a joystick in control port 2, then run the program. Don't use the button. Do press the color keys.

```
1 GETKS:PRINT"[space][crsr lf]"K$MID$("[crsr rt][crsr dn][crsr up]
[2 crsr rt][3 rvs on][crsr lf][crsr dn][crsr up][2 crsr lf][4 rvs on][crsr dn]
[crsr up][3 rvs on]";2*PEEK(56320)-233,2)*"[crsr lf]";GOTO1
```

Carl Onsgard
Green Bay, WI

\$44 Amusing your friends—Non-computerists who come to see my VIC always expect me to program to their specifications with just a few taps of the keys. So I always look for programs that are simple to type, yet impressive to use, to satisfy my visitors until their interest is genuinely aroused.

Here's a two-line program that turns my VIC into a rudimentary organ. It gets people's attention, so I can take them step-by-step into more time-consuming programming techniques. After I arouse their initial interest with this little trick, visitors never complain about the time it takes to write a program:

```
1 POKE 36878,15 : A=PEEK(197) : IF A=64 THEN 1
2 POKE 36876,A+170 : GOTO 1
```

To use the organ, just press any key. Stop/Restore turns off the sound when you no longer want to hear it.

Tony Giordano
Brooklyn, NY

\$45 Typing tip—It's common to find several identical lines within a program. There's an easy shortcut to typing them in. Say you're entering a program in which lines 30 and 70 are the same. Once you've typed in line 30, move the cursor over to the 3 in line number 30. Now simply change the 3 to a 7 and press the return key. You've just entered line 70 without destroying 30. Type LIST and see.

This technique can also be used to simplify the entering of lines that are similar but not identical. Instead of just changing the line number, change whatever makes the lines different, then press the return key.

Randy Thompson
Eugene, OR

\$46 Escaping from Quote mode—Trick \$04 gave some suggestions for breaking out of the Quote mode,

which you enter after using the insert key. (In the Quote mode, the cursor control keys don't work as you'd often like them to.)

Another way out is to use your space bar to fill the inserted holes with space characters. Then you can type, delete and move your cursor to your heart's content.

Roberta London
Houghton, MI

\$47 RVS hint—Whenever you press RVS on and want to shut it off, you can press Return instead of pressing RVS off.

Erik McMenamin
New Haven, CT

\$48 Printing quotes—The trick for putting quotation marks around a word is simple once you look at it:

```
10 PRINT CHR$(34) "BARTLETT" CHR$(34)
```

John Ouverson
Madison, SD

\$49 Data statements—When entering a zero in a Data statement, you can leave its place blank, and save a little memory and screen space. For example:

```
10 DATA 5,17,0,32
would look like
10 DATA 5,17,,32
```

When the computer reads the second line, it will put a zero where there is nothing between the commas.

Mathew Stephen
Chadron, NE

\$4A Line numbering hint—If you have ever accidentally erased line 2 of a program you are typing, because you fumble when you are typing a quotation mark or W, here's a simple solution: stop using 2 as a line number!

David E. Amos
Folsom, WV

\$4B Naming programs—Here are some hints for naming your programs in useful and/or interesting ways.

When developing and saving a program, it's frequently useful to make the date and time when you saved it a part of the program's name. Using the military style 05291252 takes only eight characters to say 12:52 PM, May 29. Since program names can be up to 16 characters, you have eight left for identifying the program itself.

Along the same lines, you can automate things a bit by using

```
SAVE"PROGNAME"+TIS
```

which will append the value of TIS to your name. Here you have to be careful that the name+TIS is 16 characters or fewer, and that resets of TIS don't confuse you. TIS is reset by turning on the computer, by using a reset button and by setting TI.

When saving to tape, you can include cursor controls, RVS on and off, color keys and so on as part of your program's name. The effect can be exciting, but whenever you're loading the program by name, you must include the special symbols.

When saving a machine language program, make its SYS

call a part of its name. That way, when you see MONITOR 828 on a directory or elsewhere, you'll know in a flash that it's an ML program, and that it's called with a SYS828.

L.F.S.

\$4C Magic names—When you save a program to disk or tape, save the name of the program with a CHR\$ code:

SAVE CHR\$(0) + "programname",8

Now the program can only be loaded with the CHR\$ code. Note the unusual way the program's name is saved in the disk directory.

Bart van Baren
Wageningen, The Netherlands

\$4D Naming programs—You can make your program lock the computer into lowercase mode by saving it on tape as follows:

AS=CHR\$(14)+CHR\$(8)+"program name":SAVE AS

Replacing the 14 with a 142 will lock the computer into the Graphics mode. Deleting the CHR\$(8) will put the computer into either mode, but the user will be able to switch modes by using the shift and Commodore keys.

E.L. Hayno
Pensacola, FL

\$4E Cassette saves—Do you want to add a little color to the name of your program? When you save it, make one or more color keys part of the program's name. For example:

SAVE "[rvs][grn]N[red]A[pur]M[blu]E"

Each color key counts as one of the name's 16 maximum characters.

Joon S. Paik
New York, NY

\$4F Tape save tip—To save time when making more than one copy of a program, try this: Clear the screen, then execute the Save and Verify commands as usual, with the Verify command on the line immediately below the word READY after saving.

For successive copies, place the cursor over the initial Save command, then press CTRL and a color that is different from the one printed on the screen. When you press the return key, the PRESS RECORD... prompt will change to the new color. When the save is complete, READY will change to the new color, and the cursor will appear on the Verify command, again in the new color. Now rewind and press Return; your program will verify with no further typing.

An occasional glance, even from across the room, will tell you whether your computer is saving, verifying, or if it needs your attention. The same technique can be used for loading and saving a series of programs on the same tape.

Marie E. Coon
Bothell, WA

\$50 Cassette loading—Most of us know that to load machine language from cassette, we must use the LOAD"NAME",1,1 format, with the name optional. The second "1" tells the computer to load the program into the address range from which it was originally saved. But lots of us *don't* know that there's a case where the second 1 can

be omitted. Tapes made using the form SAVE"NAME",1,1 will *always* load back into their original addresses, regardless of the Load command that is used.

William King
Detroit, MI

\$51 Cassette directory—To get a list of all the programs on a tape, enter LOAD"X*X*X" (or some similar bizarre name). As long as the string is not the name of anything on your tape, the computer will search for it forever, printing out the name of each program it finds on the way.

David Lonard
Edinburg, TX

\$52 Write protection—The write-protect tabs used on disks make ideal write-enable tabs for cassettes! After you've broken the tab out of a cassette, you must tape over the hole before recording on it again. The disk tabs are just the right size for the job, and a sheet of them comes with every box of disks. Ask a disk-owning friend to let you have some.

L.F.S.

\$53 Disk directory—It's very useful to tape a printed copy of the directory to the disk's protective envelope. The following simple direct-mode sequence will print it for you.

LOAD"5",8:OPEN4,4:CMD4:LIST

When the printing is done, enter this to clear the printer:

PRINT#4:CLOSE4

Remember, ?# is *not* an acceptable abbreviation for PRINT#—if you use abbreviations, the proper one is P shift R.

Travis Stansbury
Oakridge, OR

\$54 Disk loading tip—If you have a Datassette on your VIC or C-64, you probably know you can type shifted Run/Stop to load and run the next program on the tape. Disk users, believe it or not, can take advantage of this, too. Type (don't hit Return yet):

LOAD"program name",8:

Now press shifted Run/Stop, and the computer will load your program and automatically run it!

Marcus Featherston
Fairdealing, MO

\$55 Closing files—Leaving open files can be disastrous, and it often happens when your program crashes unexpectedly. You're never sure *which* files are open, and going through a list of Close statements can be the ultimate in tedium. SYS65511 closes all open files automatically and easily.

Kenneth H. Stroebel
Murrysville, PA

\$56 Disk drive crash test—The 1541 disk drive has a habit of occasionally locking up in the middle of an operation. When you are loading or saving a long program, you often don't know if the operation is still going on, or if your

(continued on p. 146)

Magic

system has locked up. To check if the operation is still going on, press the shift/Commodore combination a few times and watch the screen. If the characters shift between upper- and lowercase, the operation is still going on.

Don't expect the shift to occur every time, as the computer is working with the disk *and* reading the keyboard. But if the shift doesn't occur after several tries, you can assume the disk is locked up and you should restart your system.

Jonathan Entner
Malvern, PA

\$57 Disk Wedge tip—With the Wedge utility for the C-64 or VIC, typing @S will list the entire disk directory. If you are only interested in the disk's name and/or the number of blocks free, try typing @\$—it will give you only the first and last lines of the directory. Using this technique more than once can give a DRIVE NOT READY error, which can be easily corrected by using @\$ one time.

Paul F. McDonald
Nashua, NH

\$58 Video tip—When typing in programs, try turning down the color control on your color TV. The black and white display is easier to read and easier on your eyes.

Michael Crowther
Framingham, MA

\$59 Another video tip—Depending on your TV set or monitor, the initial video display of the C-64 can be made sharper by changing the background and cursor colors. Try this:

[CTRL 2] POKE 53280,0 : POKE 53281,0 [Return]

Long Kha
San Diego, CA

\$5A Printer substitute—Do you lack a printer to review a Basic listing or network session? If you own a VCR, tape your material and review it at slow speed or in Freeze Frame mode. If you press CTRL while listing the program, you'll get a better video recording by slowing down things at the computer's end.

Steve Cunningham
Lynwood, CA

\$5B Alphacom printer fix—The paper on the small Alphacom 40-column printer has a troublesome tendency to feed back into the paper compartment, leading to paper jamming in the print-feed mechanism. You can avoid the problem by placing a small piece of tape over the cover slot and onto the rear of the printer base. If you place the tape

correctly, it won't interfere with opening and closing the lid.

Mark W. McCann
Montrose, MI

\$5C Ribbon rejuvenation—When the ribbon in your VIC 1525 printer begins to run out of ink, you can revive it with stamp-pad ink. Of the two capsules through which the ribbon runs, one lets the ribbon pass more freely. Pry that one open with a small knife. The foam rubber cylinder is the ink holder. Dab ink all around the top of it with the brush from the ink bottle. After you reload it, run the printer awhile to even out the ink distribution.

Another option is to buy a new, identical ribbon at Radio Shack. Catalog #26-1424, for the TRS-80 Line Printer VII, fits the Commodore 1525 exactly, and is easier to come by than the same product under the Commodore label. It bears a manufacturer's product number 10A1, and may be available under other labels.

Gregory Warnusz
St. Louis, MO

\$5D Printer paper alignment—The following little program will verify that the printer is properly aligned on the first line of print on a page.

```
10 REM ALIGN PRINTER
20 OPEN 4,4 : BS = "*****"
30 FOR I = 1 TO 66
40 PRINT#4,I;BS
50 NEXT
60 CLOSE 4
```

On the VIC-1525 printer, place the top of the black plastic printer tab just above the bottom of the last hole on a page and run the program. Run it again if necessary until proper line alignment is obtained.

Jorge R. Gonzalez
Miami, FL

\$5E Printer hint—The usual single-spaced program listing doesn't leave much room for notes and additions on the printout. A double-spaced listing would often be preferred, and is very easy to get with the VIC or C-64. Just use a file number greater than 127 in the Open statement for your printer, and the computer will send an extra line feed after every carriage return. For example:

```
OPEN 128,4 : CMD 4 : LIST
will give the listing, then
PRINT#128 : CLOSE 128
```

will unlisten the printer and close the file.

David Ratliff
Magee, MI

\$5F VIC typewriter hint—Commodore's Home Calculation cassette package includes a popular word processor that allows backward movement only one line at a time. Trying to back up to material on a previous page is time consuming at best, and maddeningly frustrating at worst.

But there is a tricky way to get back to any text line number you desire. Just exit the program using the stop and restore keys, then type L = n [RETURN], where n is twenty less than the line you want to see at the top of your screen.



Then type GOTO 43 [RETURN] to reenter the program without losing your text.

**Howard M. Mesick
Hartly, DE**

\$60 C-64 buzzer—It's easy to signal an incorrect user response by jogging the volume control on and off with:

```
10 FORA = 1TO20:POKE54296,15:FORT = 1TO3:NEXT:POKE
54296,0:FORT = 1TO3:NEXT:NEXT
```

**James G. Cooper
New Albany, IN**

\$61 Backward 64 sound—If you use a 1701/1702 monitor with a 5-pin DIN to 4-RCA cable plugged into the back of it, one of the RCA plugs is dangling free. You can use it as an audio input to your computer.

By using a patch cord to connect it to a radio or recorder output jack, and typing POKE 54296,15 (max. volume), you can play the radio through the 1701/1702's speaker, under computer control! The computer can filter and control the volume of the radio sound.

To be safe, you should consult p. 472 of the *Commodore Programmer's Reference Guide*, to find the acceptable characteristics of the signal you want to send to EXT IN.

**David H. Kornhauser
Honolulu, HI**

\$62 REM trick—(This is a really good one!) You can make your listings do very unusual things by incorporating color changes, RVS on, cursor movements and so on into REM statements.

Enter your remark, including the control characters and any text, as if it were a character string in a Print statement, but leave off the closing quote. Then press the return key and use the cursor keys to position the cursor over the first character in the string. Insert a shifted return character by pressing

```
[RVS on][insert][shift M][Return]
```

The shifted return will appear as a reversed shifted M or reversed backslash. Now, when the line is listed, all the control characters after the shifted M will be executed, just as though they were in a Print statement!

You can't edit this special REM from a listing, so to test it, list it by itself while the original line you typed is on the screen. Try the following to see what we mean.

```
10 REM "[whl][RVS on]WHITE MAGIC!
```

Type it in, then insert the shifted return as described above. List 10, then try some of your own.

**Carl Onsgard
Green Bay, WI**

\$63 Highlighting REMs—Many people use asterisk-filled REM lines before and after their program remarks to make the remarks stand out in program listings. Typing all those asterisks can be tedious, but there's a simpler way. Simply type REM" and hold your finger on one of the cursor keys.

The quote mark after the REM puts Quote mode graphics symbols on the screen in place of cursor movements, and the repeating feature of the cursor keys eliminates having to type each character individually. All you do is remove your finger before the end of the line is reached. Incidentally, if you indent your remarks, let the repeat feature of the space bar indent, too.

**Glenn Zuch
N. Tonawanda, NY**

\$64 REMless remarks—As soon as the Basic interpreter encounters a REM statement, it skips to the following line. Here,

```
10 X = 1 : REM MOVE MISSILE : GOTO 100
```

the GOTO will never be executed, since it follows a REM statement.

However, there are many cases where you can omit the REM statement! As long as the Basic interpreter does not try to execute your comments, you are safe. If line 50000 is never executed, you may say:

```
50000 SET X = 1 TO MOVE THE MISSILE
```

You can also get away with:

```
10 X = 1 : GOTO 100 : MOVE MISSILE
```

Westmoreland Commodore Newsletter

\$65 One-line wallpaper store—255 lovely patterns to choose from, in the privacy of your own home. This version is for the C-64; for the VIC, change the 1040 to 528, and leave out the unique C-64 colors. For either machine, you can change the length and makeup of A\$, giving an entirely new selection of patterns.

```
1 A$ = "[whl][red][cyn][pur][grn][blu][yel][gray 1][brown][blk]":
N = N + 1:FORJ = 1TO1040:R = JANDN: ?MID$(A$,R + 1,1)"[RVS on]
[space]":: NEXT:GOTO1
```

**Marion Maddocks
Glenwood, IA**

\$66 SINFul one-liner—Run the following and function as a transcendental meditator.

```
10 POKE 646,RND(0)*8:PRINTTAB(SIN(X)*8+10)"[RVS on][4
space]":
X = X + 0.3:GOTO10
```

It's better on the C-64 if you change both 8s to 16s, change the 10 to an 18 and add an extra space after the RVS.

**David Lonard
Edinburg, TX**

RUN

The Commodore 64 & VIC-20 Magazine

DISK-O-64

Add New Disk Commands to Your C-64

U.S.A. \$2.95
Canada \$3.50
June 1984
A CWC/I Publication

**Programs of the Month—
20/64 Joystick Artists at Work**

Micro Communications Takes Flight!

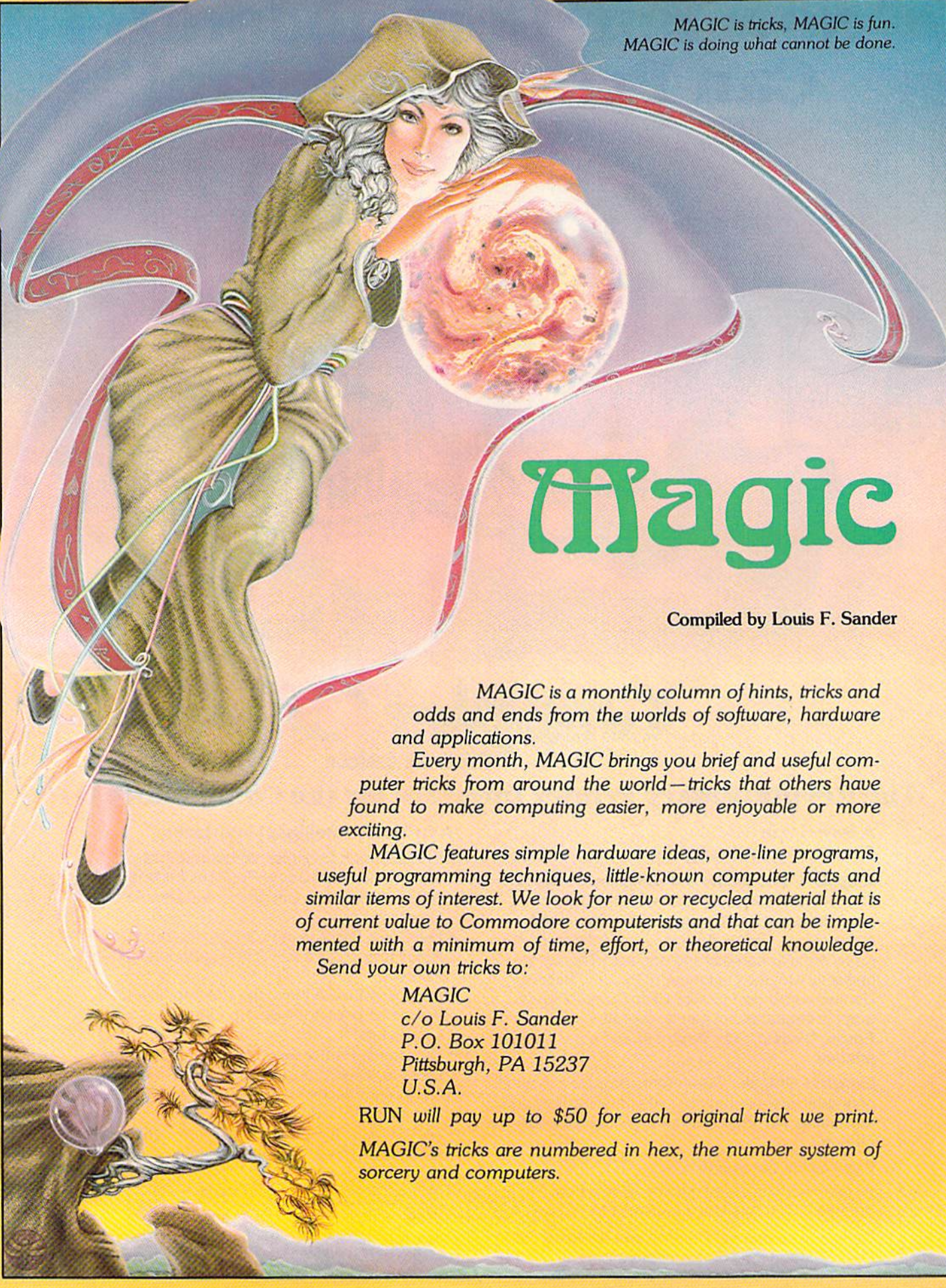


The 91st Day Blues

or

Where's the Service After the Sale?





MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Magic

Compiled by Louis F. Sander

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge.

Send your own tricks to:

MAGIC
c/o Louis F. Sander
P.O. Box 101011
Pittsburgh, PA 15237
U.S.A.

RUN will pay up to \$50 for each original trick we print.

MAGIC's tricks are numbered in hex, the number system of sorcery and computers.

When summer's magic pulls stronger than the lure of computing, *RUN*ners need not fear—very late at night, long after the witching hour, the spirits of *MAGIC* remain awake. Constantly, craftily, they conjure cunning contrivances, created to confound their comrades in computing. Behold their mighty works:

\$67 Increasing execution speed—In a program that has a stack of If statements, place the decision with the highest probability at the top of the stack. Better yet, replace the Ifs with ON...GOTOs, if possible.

Also, place frequently used subroutines at the beginning of your program, and use a GOTO to jump around them when the program is first run. Since the search for subroutines starts with line number zero and continues in ascending order, the subroutines with low line numbers will be found faster.

Wayne Robotham
Kingston, Jamaica

\$68 Simple tricks—[Certain valuable tricks, although presented in the user's guides, are not known and used by everyone. From time to time, we will print them here, for the benefit of those who haven't read their manuals closely enough. Ed.]

Pressing the shifted run/stop key will load and automatically run the next program on the tape.

During C-64 tape loads, the tape stops and the screen display returns every time a program is found. After a pause of several seconds, the screen clears and the tape starts turning again. During the pause, you can start the tape immediately by pressing the CTRL, Commodore or space keys.

During a List, or any time the computer is printing to the screen, you can slow the printing appreciably by holding down the CTRL key.

If you hit the stop key by mistake, you can usually use the CONT command to resume execution of your program.

When using an If statement to test for a non-zero value of a variable, the <> can be omitted. The expression IF X THEN...is equivalent to the expression IF X <> 0 THEN...

L.F.S.

\$69 INT hint—Some Basic statements and functions automatically perform an INT as an early step in their processing, and in those cases an INT in your program may be unnecessary. Poke is one of these, and one where we often see the unnecessary use of INT. You can prove it to yourself by running this little program:

```
100 POKE 5000,INT(99.5)
110 PRINT PEEK(5000)
120 POKE 5001,99.5
130 PRINT PEEK(5001)
```

As you can see, both Peeks are 99. As you learn more about Basic, you'll see more and more places where you can eliminate INT.

A.W. Grym
London, England

\$6A Overcoming Load Errors—It's not necessarily fatal when a Datasette load terminates with a ?LOAD ERROR message. There are two copies of the program on every tape, and the error message arises when the computer compares them and finds them different, even if the copy it loads into memory is perfectly good.

So when you get a Load error, try this: List the program in memory to see that it's a good copy (if it's bad, the problem is usually very obvious), then, in Direct mode, type:

```
POKE45,PEEK(831):POKE46,PEEK(832):CLR
```

Chances are excellent that your program will run perfectly.

Thomas Schuster
Staufenberg, West Germany

\$6B Character set switch disable—To prevent the user from switching between the graphics and lowercase character sets, just enter POKE 657,128. This will disable the use of the shift/Commodore key combination. POKE 657,0 will enable it again.

Joe Paydarfar
Chapel Hill, NC

\$6C Typing tip—When typing a number of spaces in a Print statement, looking at the line just above your cursor will help you count the spaces you are entering.

Darin Hieb
Lodi, CA

\$6D Typing hint—When typing programs from magazines or books, you can save time and memory by *not* typing the REM statements. Be careful, because sometimes GOTO statements go to a REM line. [Bad programming practice. Ed.] In these cases, just change the number in the GOTO statement to the next highest non-REM line number.

Joseph Flynn
Pearl River, NY

\$6E Typing tip—When typing in a program line with lots of parentheses, it's easy to leave one out. Try counting the number of parentheses—if a number is even, you've probably typed in the correct number. If it's odd, you've surely left something out.

Kris Jackowski
Wethersfield, CT

\$6F TV Typewriter—On the VIC and C-64, a direct mode POKE 120,0 turns the computer into a mindless printing machine. Characters typed on the keyboard will be repeated on the screen, but not accepted as input to the computer. You can't run, load, save, undo the Poke, or *anything*, until the computer is reset. All keys work properly, including color and cursor controls, but the stop/restore key combination has no effect.

Quyen N. Truong
Address unknown

\$70 TV Typewriter II—Here's another way to do the same thing on the VIC:

10 SYS 58959 : PRINT "{CRSR UP}"CHR\$(13) : GOTO 10

Run the program and you're in TV typewriter mode. In this case, the stop/restore key combination will get you out of the program.

Matt Cisternino
Ontario, CA

\$71 Error Message—There have been reported mysterious occurrences of the Out Of Data error when editing and fiddling about in general. This is not a bug, but is due to pressing Return while the cursor is over the Ready prompt. The machine interprets this as READ Y, and since there is usually no corresponding Data statement to the Read command, we get the error.

The Transactor

\$72 VIC curiosity—On the VIC-20, if you Poke into location 36866, graphics symbols and colors appear on the screen. For starters, type in:

POKE 36866,10

After this, you can Poke numbers up to 100 or so, and get interesting patterns on the screen. To get out of this mode, use run/stop and restore keys.

Jason Issendorf
Brandon, SD

\$73 VIC scrolling—The following line will make the entire VIC screen scroll downward, being replaced by the background color.

100 FOR I=25 TO 130:POKE36881,I:NEXT

This line will scroll it back up again:

200 FOR I=130 TO 25 STEP -1:POKE36881,I:NEXT

While the screen is down (out of sight), you can clear it and/or print onto it, and the resultant copy will be on the screen as it scrolls back up. Presto-change-o!

Rob Jacob
Jones, MI

\$74 VIC one-liner—Run it, then press some keys.

100 POKE 36879,PEEK(197) OR 8 : GOTO 100

Walter Orange
Hollywood, CA

\$75-\$79 C-64 one-liners—The accompanying listing includes five different C-64 programs submitted by our readers. We have listed them all together, with numerous REMs, but you can easily separate them.

Computer Sounds meets the one-line criterion, but you must abbreviate every possible keyword in order to fit it in. The abbreviations are in Appendix D of your user's guide. When you run the program, be sure your monitor's volume control is turned up to maximum.

The Alphabet Pokers give some interesting screen displays. Clearing the screen before running them gives the best effect, but of course it takes a second line. Tch, tch!

Skyline and Squares also can run as one-liners, but the extra lines give a nicer presentation.

L.F.S.

C-64 one-liners.

```
9 REM
90 REM ** ALPHABET POKER #1 **
91 REM CLEAR SCREEN, THEN RUN.
92 REM LAMAR MCLOUTH, DAVISON, MI
93 REM
95 A=RND(0)*26+1:POKE1030+A*40*12,A:POKE55302+A*40*12,1
  4:FOR I=1 TO 150:NEXT:GOTO95

99 REM
100 REM ** ALPHABET POKER #2 **
101 REM CLEAR SCREEN, THEN RUN.
102 REM LAMAR MCLOUTH, DAVISON, MI
103 REM
106 REM
150 POKE53281,0:A=RND(0)*26+1:B=RND(0)*998+1024:POKEB,A
  :POKEB+54272,A:GOTO150

199 REM
200 REM ** SQUARES **
201 REM LINE 240 IMPROVES THE COLOR.
202 REM
204 REM GLENN ZUCH, N. TONAWANDA, NY
205 REM
240 POKE53280,6:POKE53281,6:PRINT"(SHFT CLR){CTRL 8}":F
  ORI=1 TO 19:PRINT:NEXT
250 PRINTMID$(" (CRSR UP) (CRSR DN) (CRSR LF) (CRSR RT)",RN
  D(.9)*3+1,1)("{SPACE}{CRSR LF}":FOR I=1 TO 50:NEXT:PR
  INT"(CTRL 9) (CRSR RT) (CRSR LF) (CRSR RT)":GOTO250

0 REM ** COMPUTER SOUNDS **
1 REM KEYWORDS HAVE BEEN ABBREVIATED
2 REM TURN VOLUME TO MAXIMUM!
3 REM HO LAM, NEW YORK, NY
4 REM
5 S=54272:P(SHFT O)S+4,17:F(SHFT O)I=0 TO 1:J=INT(R(SHFT
  N)(1)*99):P(SHFT O)S+I,J:P(SHFT O)S+I+5,J:N(SHFT E
  ):P(SHFT O)S+24,15:G(SHFT O)5

299 REM
300 REM ** SKYLINE **
301 REM LINE 340 IMPROVES THE COLOR.
302 REM
304 REM GLENN ZUCH, N. TONAWANDA, NY
305 REM
340 POKE53280,12:POKE53281,12:PRINT"(SHFT CLR){CTRL 1}":
  :FOR I=1 TO 19:PRINT:NEXT
350 PRINTMID$(" (CRSR UP) (CRSR DN) (CRSR LF) (CRSR RT)",RN
  D(.5)*4+1,1)("{SPACE}{CRSR LF}":FOR I=1 TO 50:NEXT:PR
  INT"(CTRL 9) (2 SPACES) (CRSR LF)":GOTO350
```

\$7A Character colors—On the VIC and C-64, memory location 646 holds the color code of the current character color, and you can change the character color by Poking 646. Under most conditions it is easier to change it by printing a color control character such as CTRL 3, but there are times when POKE 646 is better. For example, when you want to print in random colors, you can do this:

```
100 POKE 646,RND(0)*8
110 PRINT "MULTICOLOR",
120 FOR I=1 TO 200 : NEXT
130 GOTO 100
```

Line 100 randomly sets the character color, as running the program will prove. C-64 owners can change the 8 in that line to a 16 to take advantage of the C-64's eight additional colors. VIC owners making that change will see something quite unexpected.

L.F.S.

\$7B RF modulator hint—Sometimes when the RF modulator is too close to the TV set, it causes interference. Moving it can improve the TV picture, and so can wrapping it with aluminum foil.

Reginald Reed
Orange Park, FL

\$7C Indented listings—You can indent Basic program lines by using shifted characters. To indent a line, type the line number, then any shifted letter, then any number of spaces, then the material you want on the line. When the line is listed, the shifted letter will be ignored, but the

(continued on page 140)

leading spaces won't. To have a completely blank line, enter the line number, a shifted letter, a space and another shifted letter. Neither of these procedures will affect execution of your program in any way. Editing an indented line will remove the indentation.

Ronald LaPread
Detroit, MI

\$7D Chips—If you'd like to know about the silicon chips that make your computer tick, the October 1982 issue of *National Geographic* is a good place to start. Most of that issue was devoted to explaining what chips are, how they are made and how they work. If you don't have that back issue yourself, check with your public library.

L.F.S.

\$7E Waiting for input—At some time or another, most programs need to pause to give the user time to read instructions or other information on the screen. Usually, programmers use a Get loop to allow this pause, but there's a much better way: Use the statement WAIT653,1 to freeze the computer until the shift key is pressed.

If there are several pages of instructions with a WAIT653,1 at the end of each page, you can rapidly skip through the pages just by holding down the shift key. If you want to avoid this, put WAIT653,1,1 after each WAIT653,1. This requires you to press and release the shift key before proceeding.

Randy Palermo
Fort Jones, CA

\$7F Centered printing—Centering lines of text between the left and right edges of the screen can be time-consuming, especially if you want to center more than a few lines. You can let the computer do the work for you by using the following subroutine. For a VIC, use 22 instead of 40 in line 1010.

```
100 AS="CENTER":GOSUB1010
120 AS="THIS":GOSUB1010
130 AS="MATERIAL, PLEASE":GOSUB1010
140 END
1000 REM ** CENTERING SUBROUTINE **
1010 PRINTTAB((40-LEN(AS))/2)AS:RETURN
```

Works like a charm.

Michael Berry
Kewanee, IL

\$80 Rounding off—The function FNR(N) may be used to round a number, N, to any required decimal position, DP. As with all user-defined functions, you must execute the Definition statement before using the function. And if there's an error in the Definition statement, the error message won't show it—it will indicate an error in the first line where the function is used! Here's the function:

```
10 DEF FNR(N) = INT(N/DP + .5)*DP
```

As an example, to round the value of Y to the nearest one-hundredth, type:

```
105 DP = .01 : Z = FNR(Y) : PRINT Z
```

and to round 27 times X to the nearest ten, type:

```
201 DP = 10 : T = FNR(27*X) : PRINT T
```

Chuck McGaffin
Ballston Lake, NY

\$81 String Handling—One little-known use of the MID\$ function is remainder string. If the third parameter of the MID\$ function is omitted, the resulting string will be every character to the right of the specified start position for the string being operated on.

For example, if AS = "123456789", then MID\$(AS,2,4) is "2345". But MID\$(AS,2) is "23456789".

This is not the same as RIGHT\$, since that function returns an absolute number of characters starting from the rightmost position. This application works best when the right-hand portion of a string is wanted and the string length is not known.

The Transactor

\$82 Printing numbers—When the computer prints a positive number, it always prints a leading space (where the sign would be if the number were negative), and a trailing space (to set the number off from whatever is printed next). If this is annoying in your application, use

```
N$ = MID$(STR$(N),2)
```

Where N is the number, N\$ will be its string equivalent, less the extra spaces. To put the spaces back in, use N = VAL(N\$).

Don Saito, Jr.
Torrance, CA

\$83 Graceful exits—Many programs execute Pokes to pointer locations for the purpose of setting up custom characters or reserving space for machine language subroutines. If these programs are simply terminated with End or a keyboard stop/restore, the pointers remain set to their new positions. When the next program is loaded and run, you may get an Out Of Memory error or other strange effects. To avoid the problem, try adding the following routine to your program at a logical point.

```
5010 PRINT "C=CONTINUE Q=QUIT"
5020 GET AS
5030 IF AS="C" THEN (the appropriate line number)
5040 IF AS="Q" THEN SYS64802 (or 64738 for a C-64)
5050 GOTO 5020
```

When your program encounters the routine, if you select Q, you'll cause a cold start, resetting all pointers, color, sound and so on to the "seed" state, and you'll also re-initialize the program. This is a tidy way to exit a program and will save wear and tear on your power switch.

Allan E. Wheeler
Paso Robles, CA

\$84 VIC to 64 conversion—If you have some VIC programs that you want to run on your C-64, add this line:

```
PRINT "{SHFT CLR}":IF FRE(X)<0 THEN POKE 53280,3:POKE 53281,1
```

It will set the C-64 colors to the VIC defaults—white screen with cyan border. The If...Then statement allows the program to run on either computer, since the FRE function is negative on the C-64 for programs that use less than 32K bytes of memory.

Calvin C. Guild
Houston, TX

\$85 Computed GOTO—This routine will let you go to a computed line number, that is, to a line number held in a variable. It prints to the screen, so it's not usable in all circumstances. If AA is the computed value, type:

```
100 PRINT "{SHIFT CLR} {3 CRSR DNs} GOTO"
AA "{HOME}": POKE 198,1: POKE 631,13: END
```

The PET Gazette

\$86 Delay loops—If your program has many For...Next loops to create delays, you can put them in subroutines to save time and memory. Here's an example for delays of various lengths:

```
900 REM DELAY LOOPS
901 FOR I=1 TO 1000: NEXT: RETURN
902 FOR I=1 TO 2000: NEXT: RETURN
903 FOR I=1 TO 3000: NEXT: RETURN
```

Now when you want a delay in your program, just type GOSUB 901 or GOSUB 902 and so on. Notice how the line numbers make it easy to remember the length of the delay.

You should write subroutines only for delays that you'll use at least twice in the program; otherwise, it's not worth the extra effort of setting up this system.

William W. Braun
Arnold, MO

\$87 Slow printing—To have your computer print letters individually at a slow rate of speed, type:

```
10 AS="your message here":GOSUB1000
999 END
1000 FOR A=1 TO LEN(AS):PRINT
MID$(AS,A,1);FOR B=1 TO 40:NEXTB,A:
RETURN
```

To print at different speeds, just change the high value of B in the For...Next loop.

Chris Brellochs
Ithaca, NY

\$88 Another PRINT@—To place the cursor anywhere on screen without using the Print statement, use:

```
10 POKE 781,X: REM X POSITION
20 POKE 782,Y: REM Y POSITION
30 POKE 783,0: SYS 65520
40 PRINT "message"
```

This works with the VIC and the C-64. The leftmost screen column is X position 0, and the top screen line is Y position 0.

A variation on the above lets you use a single number to specify the X,Y screen position. The home position is 0, the next is 1, and so on up to the end of the screen. The lower right-hand screen position is 461 for the VIC, or 999 for the C-64. Here's the code that will do it for the VIC:

```
100 P=250: GOSUB 1000: PRINT "message":
REM P=POSITION
999 END
1000 POKE 781,P/22: POKE 782,P-22*PEEK
(781): POKE 783,0: SYS 65520: RETURN
```

For the C-64, the subroutine is:

```
1000 POKE 781,P/40: POKE 782,P-40*PEEK
(781): POKE 783,0: SYS 65520: RETURN
```

Marcia D. Lakes
Rowland Heights, CA

\$89 Universal VIC programs—You can write your VIC-20 programs to work with any memory configuration from the minimum up to fully expanded, just by using this line:

```
S=4*(PEEK(36866)AND128)+64*(PEEK
(36869)AND112):C=37888+4*(PEEK
(36866)AND128)
```

The variable S is the starting location of screen memory, and C is the starting location of color memory. If you Peek and Poke to the screen by using these two variables, you won't have to be concerned with finding the start of screen or color memory.

Michael Caldwell
Burlington, WV

\$8A Self-modifying programs—It's easy to make programs work differently each time they're run. Our example is for an unexpanded VIC, but the equivalent of 4101 for your own computer can be found by

```
EQ=4+PEEK(43)+256*PEEK(44)
```

List #1

```
0 REM 200
100 Routine #1 goes here.
199 POKE 4101,137: END
200 Routine #2 goes here.
```

List #2

```
0 GOTO 200
100 Routine #1 goes here.
199 POKE 4101,137: END
200 Routine #2 goes here.
```

List #1 shows routine #1 ending with a Poke statement. Location 4101 is the address of the first token in the first program line, in this case, REM. The value Poked, 137, is the token value for the GOTO statement.

List #2 shows the result after the first program is run. The REM is now a GOTO, thanks to the previous Poke. Any runs thereafter will proceed according to List #2. Adding POKE 4101,143 to the end of Routine #2 will cause the program to self-modify back and forth between List #1 and List #2 each time it's run. There are many possible uses of this trick, if it's properly understood.

Gerald Mallonee
Simi Valley, CA

\$8B Restarting programs—Sometimes a program will crash unexpectedly after you've entered a lot of valuable data—you may have hit a bad bit of code, forgotten to connect a peripheral or done something else that you can avoid or correct next time. The problem often arises that you want to get back into the program without losing your data, but CONT won't execute for some reason, and Run will reset all your variables.

The secret to starting in the middle is using GOTO in Direct mode to return to a specific point in the program. Unlike Run, GOTO has no effect on variables by itself. Possible entry points include the very beginning (unless it initializes the variables you want to protect), a menu display or the routine you got kicked out of.

Some cautions: Making any changes to program lines will wipe out your variables, so save your data before correcting any bad sections of code. Depending on where you reenter the program, some variables could be changed. If you understand the program thoroughly, you can use the GOTO command, which will avoid this. If not, you should consider starting over from the beginning.

Howard M. Mesick
Hartly, DE

Since July is the month for Canadian and U.S. national holidays, we've collected some real "firecrackers" for your amusement. So tear yourself away from the festivities, switch on your computer and try our monthly *obeah*.

If you've missed one or more of our columns, or if you're hungry for more and better tricks than we have room for in these pages, take heart! We're planning a whole *book* of magic, categorized, indexed and cross-indexed for easy use. And if our readers keep submitting good tricks at their current rate, it could be a *very* thick volume, indeed. We'll keep you posted on its progress.

Trick writers take note: *Please* submit only one trick per sheet of 8½ × 11-inch paper, double-spaced from your printer if possible, with your name and address at the top of the page. Also notice our new box number this month—very computer-like, isn't it?

Well, enough of this idle chatter. Let the Magic begin...

\$8C Clarification of reset buttons trick—Trick \$33, printed back in April, showed several ways to attach a reset button. A Reset command stops program execution, returns all internal pointers to their power-up values, and brings the Bytes Free message to the screen. It has the same effect as turning the computer off, then back on, except that memory is not erased. The resetting of the pointers makes it *seem* as though Basic programs are erased, but they are still there, where an UNNEW program can revive them. Judging from our mail, many readers don't know about UNNEW programs.

The Basic program listed below creates a machine language UNNEW program that resurrects Basic programs after a Reset or a New command. As printed, it works with disk drive; if you want a tape version, change the 8 in the last part of line 60 to a 1.

To add UNNEW to your bag of tricks, enter and run our program. If you've made a critical typing mistake, you'll get an error message. If you don't get one, delete lines 1-3, then save the remaining lines as UNNEW BASIC. Run the program again, and it will automatically make and save a machine language program named UNNEW525. (It will also erase itself—we *told* you to save it!) When you need to use the UNNEW program, enter LOAD "UNNEW525",N,1 (where n=8 for disk or 1 for tape). When the load is finished, enter SYS525:CLR and your Basic program will reappear.

L.F.S

```
10 REM - UNNEW MAKER - RUN'S MAGIC, 7/84
20 FORI=1TO53:READX:CS=CS+X:NEXT
30 IFCS=6918THENPRINT"OK-DELETE LINES 20-40":END
40 PRINT"ERROR IN DATA STATEMENTS":STOP
50 FORA=525TO577:READD:POKEA,D:NEXT
60 POKE43,13:POKE44,2:POKE45,66:POKE46,2:CLR:SAVE"UNNEW
  525",8,1:NEW
70 DATA 160,3,200,177,43,208,251,200
80 DATA 200,152,160,0,145,43,165,44
90 DATA 200,145,43,133,60,160,0,132
100 DATA 59,162,0,200,208,2,230,60
110 DATA 177,59,208,245,232,224,3,208
120 DATA 242,200,208,2,230,60,132,45
130 DATA 164,60,132,46,96
```

Listing. Creates a machine language UNNEW program, as described in trick \$8C.

\$8D Debugging hint—When searching for the cause of a Syntax error, press the Commodore and shift keys to change the screen display to lowercase. This makes numbers and letters easy to distinguish, and you can spot a zero from an O, a one from an L or an omitted number quite easily.

Marion Maddocks
Glenwood, IA

\$8E Debugging tip—When your program stops due to an error, or when it runs but gives unexpected results, it's often useful to examine the values of the variables in the program. You can easily look at them from Direct mode, just by entering PRINT A to look at A, PRINT X\$ to look at X\$ and so on.

You can even look at arrays by typing in a simple Direct mode For...Next loop. But be careful—certain actions will reset all your variables to null. The most common of these are CLR, Run, or making additions, deletions or changes to numbered lines. As long as you avoid taking these actions before looking at the variables, this technique can save you many hours of frustration.

James P. Koerner
Papillion, NE

\$8F Eagle—This works on any Commodore computer, including the oldest PETs. Use the color keys and the cursor keys. If you have a VIC, use 200 instead of 150 in the For...Next loop.

```
1 GETKS:PRINT"[3 CRSR LF][3 spaces][3 CRSR LF]"$MIDS
  ("[SHFT U][SHFT W][SHFT I][SHFT J][SHFT W][SHFT K]";
  X+1,3);:X=3-X:FORD=1TO150:NEXT:GOTO1
```

Carl Onsgard
Green Bay, WI

\$90 VIC screen scraper.

```
1 FORG=5TO55:POKE36864,G:POKE36865,G+G:FORF=
  1TO65:NEXTF,G:POKE36864,5:POKE36865,25
```

Ramey Bell
Fall City, WA

\$91 Design with sound—VIC one-liner:

```
10 PRINTCHR$(204.5+RND(1));:X=INT(RND(1)*120)+135:POKE
  36878,15:POKE36875,X:GOTO10
```

Chris Blair
Staten Island, NY

\$92 Dynamic design—VIC one-liner:

```
1 POKE 36879,PEEK(36879)AND247:PRINT
  "[CLR]":FORI=1TO99:POKE RND(1)*506+
  38400,RND(1)*10:NEXT
```

I. Firkusny
New York, NY

\$93 Amazing one-liner—Here is one of the best one-liners I have ever seen. It works on the VIC and C-64, drawing a continuous maze that is very interesting.

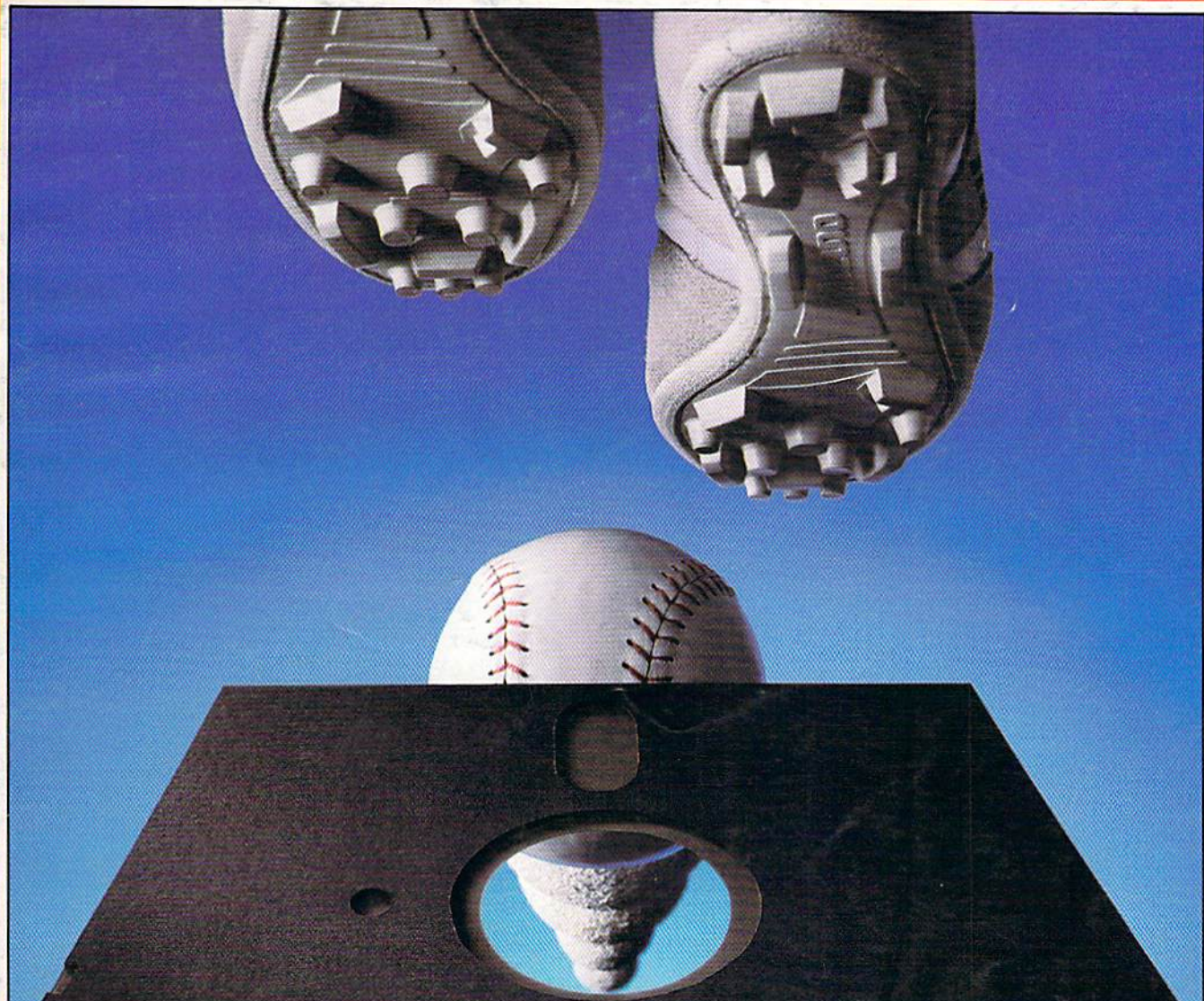


The Commodore 64 & VIC-20 Magazine

U.S.A. \$2.95
Canada \$3.50
July 1984
A CWC/I Publication

**Program of the Month—
Your Micro Pays Off!**

Lead the League with Your C-64, Baseball's Super Statistician



Chatterbox—Give Voice to Your Commodore

Commodores in the Hamshack

Double Your Pleasure with Radio-Active Software





MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Magic

Compiled by Louis F. Sander

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge. Send your own tricks to:

MAGIC
c/o Louis F. Sander
P.O. Box 101011
Pittsburgh, PA 15237
U.S.A.

RUN will pay up to \$50 for each original trick we print.

MAGIC's tricks are numbered in hex, the number system of sorcery and computers.

8 PRINT CHR\$(205.5 + RND(8)); : GOTO 8

To get random colors on the C-64, add CHR\$(149 + RND(8)*11) just before the semicolon.

**Dan A. Krueger
Cary, IL**

\$94 Input magic—If you don't want the question mark with an Input statement, try entering POKE 19,64 before it. This disables the question mark. To recover, enter POKE 19,0.

With this technique, you can't just press the return key where an input is required—the cursor will not move until you actually input something. Also, the cursor does *not* automatically move to the next line following your press of the return key; if you want it down there, just execute a Print statement following the input.

**Bart van Baren
Wageningen, Netherlands**

\$95 Input improved—One drawback of the Input statement is that it prompts the user with a question mark even if the instruction is not a question. You can avoid this by using the Input# statement and having the computer treat the keyboard as a peripheral. Here's an example:

```
10 PRINT "TYPE YOUR NAME ";
20 OPEN 1,0:INPUT#1,NM$:PRINT:CLOSE 1
30 PRINT NM$
```

With this method, the computer doesn't print a carriage return after the inputted data, so you must add PRINT after INPUT#, as is done in the example. If your program does a lot of inputting, you could set up the material in line 20 as a subroutine to be called each time you need it.

**Randy Palermo
Fort Jones, CA**

\$96 Input hint—If you use Input statements, you should know that the computer reads everything to the right of the question mark. So if you have graphics or text to the right of an Input statement on the same line, the computer will read it along with your data, most likely causing an error.

The solution is to make sure the screen is blank to the right of your Input prompt.

**Michael Berry
Kewanee, IL**

\$97 ON...GOSUB trick—If you are using ON...GOSUB or ON...GOTO and the number of destinations cannot be fitted onto one program line, break the On statement into two lines:

```
100 ON P GOSUB 1000,2000,3000,4000,5000,6000,etc. to 12000
110 IF P 12 THEN Q = P - 12
120 ON Q GOSUB 13000,14000,15000,16000,etc.
```

**D.R. Cool
Huber Heights, OH**

\$98 ON X GOTO tip—There's a bug in the documentation for this statement. If X is negative or greater than 255, the program will *not* fall through to the next line. You

will get an Illegal Quantity error.

Westmoreland Commodore Newsletter

\$99 ON...GOTO application—There are many times when a Basic program needs to "hold" on a line waiting for user input of some type. A common way is:

```
10 GET AS: IF AS = "" THEN 10
```

The trouble with this is that it "wastes" a whole program line. Here is another way:

```
10 GET AS: ON -(AS = "") GOTO 10
```

As long as AS = "", i.e., no input, the line is executed over and over. As soon as a key is pressed, the ON...GOTO becomes invalid and execution will continue on the same line. So you could have something such as:

```
10 GET AS: ON -(AS = "") GOTO 10: A = INT(X/256): B = X - 256*A: etc....
```

This allows you to pack more on a line.

**Doug Smoak
Columbia, SC**

\$9A Multiple-choice branching—There are times when it would be nice to have a test of a condition that does not default to the next line of Basic. By adding an If...Then statement before an ON...GOTO, we can have a "multiple-choice" branch, such as:

```
10 IF A>B THEN ON -(B=0) GOTO 100: GOTO 200
20 REM Continue if A not > B
```

Let's look at the possibilities of this example. If A is *not* greater than B, then line 20 would be executed. If A is greater than B and the condition in parentheses, B=0, is *also* true, then program control goes to 100. Finally, if A is greater than B and the condition in parentheses is *not* true, then GOTO 200 is executed.

This is similar to the If...Then...Else statement in some forms of Basic. Of course, you could have another ON...GOTO or If...Then statement or whatever in place of the GOTO 200 and the condition in parentheses can be anything allowable. This can at times give you some nifty code that saves several lines of testing.

**Doug Smoak
Columbia, SC**

\$9B RND hint—Many programs call for something like $X = \text{INT}(N * \text{RND}(0)) + M$. You can save time and key-strokes by using $X\% = N * \text{RND}(\cdot) + M$. The use of the integer variable form saves an INT, and the use of the period in the argument saves execution time.

**S.A. Bennice
Roanoke, VA**

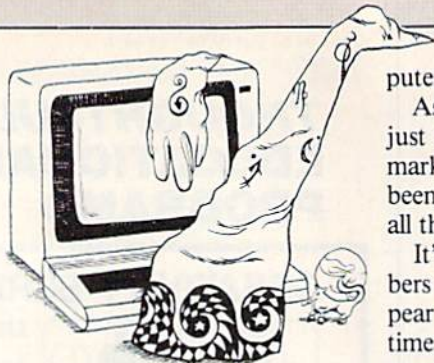
\$9C Improved PRINT@—Trick \$17 of the February issue seems a cumbersome way to print at any position on screen. The following one line can be added anywhere in your program.

```
POKE 214,12:PRINT:POKE 211,10:PRINT "RUN MAGAZINE"
```

In the above line, POKE 214 sets the line number and POKE 211 sets the column number.

(continued on p. 122)

Magic



You can use any line or column numbers to print where you'd like or to go back up on the screen and print in data. It doesn't seem to work without the Print statement between the two Pokes.

Unsigned
Parsippany, NJ

\$9D C-64 cursor speed—POKE 56325,SP will speed up or slow down the cursor, if SP is any number from 0-255. The lower the number, the faster the cursor moves. The normal value is 58.

Don Saito, Jr.
Torrance, CA

\$9E VIC cursor and list speeds—Poking 25 into location 37879 drastically increases the speed at which the VIC's cursor moves around the screen. Poking a value lower than about 20 speeds it up incredibly. Poking a zero causes the screen to scroll slowly while listing a program; the shift-lock key slows it even further and the CTRL key stops the listing for as long as you press it.

Matt Cisternino
Ontario, CA

\$9F Appending programs—Here's a way to append one Basic program onto the end of another. It's a Direct mode technique, but you could make a program of it if you'd like. Load your first program, then enter:

```
PRINT PEEK(43)PEEK(44)PEEK(45)
```

Write down the first two numbers that the computer returns. If the third number is 2 or more, then enter:

```
POKE43,PEEK(45)-2:POKE44,PEEK(46)
```

If the third number is 0 or 1, then enter:

```
POKE43,PEEK(45)+254:POKE44,PEEK(46)-1
```

Next, load the program you want to append. It *must* have line numbers higher than those in the first program. Finally, enter:

```
POKE43,x:POKE44,y
```

where x and y are the first and second numbers you wrote down above. List the program, and you'll find that the second program has been attached to the first. You can repeat this whole process to append even more programs to the first two.

Frank Tymon
Lancaster, CA

\$A0 Simple sort—If you ever have to put a list of numbers into numerical order, you can have your com-

puter do it without even entering a program.

As long as the numbers are integers between 0 and 63999, just type the number, then type any letter or punctuation mark and press the return key. After all the numbers have been entered in this manner, type LIST, and you'll see that all the numbers are in order.

It's easy to see that the computer interprets those numbers as line numbers; of course, each number will only appear once in the computerized list, no matter how many times it occurred originally. And if your original list is of numbers *plus* other information, you can enter the other information after you type the number, instead of just pressing a key for a letter or punctuation mark. For example, enter:

```
5 GOLDEN RINGS  
1 PARTRIDGE IN A PEAR TREE  
3 FRENCH HENS  
2 TURTLEDOVES  
4 CALLING BIRDS
```

It won't list in the classic sequence, but it *will* make order out of chaos.

Richard Bell
Atwater, CA

\$A1 Disk protection—Do you want to *permanently* write-protect a 1540/1541 (or 4040) disk? With the following method, the disk will be fully readable, but absolutely cannot be written to by any 1540/41 or 4040 drive.

Byte 02 (i.e., the third byte) of Track 18, Sector 0 normally contains hex \$41 (ASCII "A") signifying 4040 format. If this byte is changed to \$01, any attempt to write to the disk will fail, with error 73 DOS MISMATCH. (The \$01 apparently codes for 2040 format, which is read- but not write-compatible with 4040 format.)

The following short program will do the deed, but *beware*...the only recovery is reformatting the disk. (Of course, the information on the disk can be copied to another, unprotected disk, if the need should arise.)

```
10 REM - OPEN COMMAND CHANNEL AND A DIRECT ACCESS  
    BUFFER (DRIVE# 8 ASSUMED):  
20 OPEN 15,8,15,"I":OPEN 8,8,8,"#"  
30 PRINT#15,"UA:8,0,18,0":REM - READ T18,S0 INTO BUFFER  
40 PRINT#15,"B-P:8,2":REM - SET THE BUFFER POINTER TO  
    DESIRED BYTE  
50 PRINT#8,CHR$(1):REM - CHANGE THE BYTE TO $01  
    (CAREFUL - NO CARRIAGE RETURN)  
60 PRINT#15,"UB:8,0,18,0":REM - REWRITE THE BUFFER TO  
    THE DISK  
70 PRINT#15,"I":CLOSE8:CLOSE15:END:REM - REINITIALIZE,  
    DONE!
```

William M. Bennett
Atkinson, NH

\$A2 Cassette handling tip—When using a cassette drive with a digital tape counter, save your programs on a series of numbers, such as 10,50,100,150,200 and so on. If you ever lose your card of programs, all you'll have to do is load at these popular numbers to tell what programs are on the tape.

Brian R. Barnholtz
Winona, MN

\$A3 User-friendly program names—I had written a machine language program for my wife, who is not a computer user. I wanted the loading of the program from tape and the running of the program to be as easy as possible.

The solution was to put the program at the beginning of a tape (of course) and to name it with the "SYSxxxxx" command preceded by one CRSR DN, followed by three CRSR UPs. This way, all you have to do is type in LOAD. Then, after the program is loaded, pressing the return key will start the execution.

For example, working from a machine-language monitor, if I were to save a program from \$C000 to \$C14A, I would issue this Save command in the monitor:

```
.S "{CRSR DN}SYS49152{3 CRSR UPs}",01,C000,C14A
```

If you're working with a disk, this technique obviously gets fairly complicated, since the Load command would have to include the full name with the cursor commands. But for tape, it works well.

Steven Kinsel
Pittsburgh, PA

\$A4 Basic/machine language cassette Saves—Basic programs often incorporate short machine language subroutines that are saved in the cassette buffer. This usually requires a routine in the Basic program to Poke the machine language subroutine into the buffer. A simple trick lets you save memory by omitting the Poke routine and saving the entire program together on tape (machine language subroutine and Basic). To use it, just put your machine language somewhere in the range 849-1019 decimal, then execute the following Direct mode line:

```
AS = "" : FOR N = 849 TO 1019 : AS = AS + CHR$(PEEK(N)) : NEXT N
```

When you get the Ready prompt, execute

```
SAVE "program name" + AS
```

There must be exactly 16 letters and spaces between the quotes, or the subroutine will not load properly. Also note that the starting address of the subroutine *cannot* be the customary 828 decimal, but must be 21 bytes above it.

Alan P. Davenport
Salem, OR

\$A5 Joysticks—In most programs that require joysticks, there are times when the player is asked to press a key to continue. If you're writing such a program, why not use the joystick's fire button instead of a key? The following lines will cause a halt in program execution until the appropriate fire button is pressed.

```
WAIT 37137,32,32 VIC-20 joystick
WAIT 145,16,16 C-64 joystick #1
WAIT 56464,16,16 C-64 joystick #2
```

These routines use very little memory compared to other similar ones, which can be very important in the unexpanded VIC, or if your program uses a lot of memory.

E.L. Hayno
Pensacola, FL

\$A6 Code conversion—Have you ever wanted to convert a character's Commodore ASCII representation to its

screen Poke code? The following function will do it perfectly for every character.

```
DEF FNF(A) = A - 161 - 33*(A<255) - 64*(A<192) - 32*(A<160) +
32*(A<96) - 64*(A<64)
```

The function, usable on both the VIC and C-64, will convert any ASCII value A to its proper code, ready for Poking to the screen. What good is such a function? Well, consider that some word processors store text on disk in ASCII while others use screen codes. It's a good way to convert between the two! Other uses will be found in educational software, graphics programs and general utilities.

For PET/CBM machines, the function is much simpler, and is presented here for owners of those computers.

```
DEF FNF(A) = ((A AND 128)/2) OR (A AND 63)
```

It fails to convert CHR\$(255) properly, but works for all the rest.

Thomas Henry
Mankato, MN

\$A7 Reverse code conversion—The following line of code will convert any Commodore screen code value to the corresponding Commodore ASCII code.

```
A = A + 128*(A>127):A = A - 64*(A<32 OR A>95) - 32*(A>63)
ANDA<96)
```

Input any screen code value between 0 and 255. Output equals the ASCII value (32 to 127 or 160 to 191).

Edward Guancial
Columbus, OH

\$A8 Millionaire's one-liner—In Canada and the northern United States, there's a craze for a lottery called 6/49. Approximately four months ago, the grand prize was \$14,000,000. Many groups were formed to buy as many combinations as possible.

The following one-liner prints six random numbers from 1 to 49. You run the program for as many times as you must, to choose groups of six figures. Sometimes, the random choice gives two similar numbers; you just ignore this choice and ask for a new one by typing RUN.

```
10FORX = 1 TO 6:PRINTINT(49*RND(1))+1;NEXT
```

Jean-Pierre Thivierge
St. Bruno, Quebec

\$A9 Word trick—Can you (or your computer) rearrange the letters in ROAST MULES to form one fairly common English word? Maybe a program could print all the permutations of these ten letters, and you could pick that one word out of the 1814400 possibilities. Or are other methods more efficient?

To tell the truth, performing this little exercise is something that most children can do with ease, but it tends to give adults a headache. No magic is involved, and head over heels pursuit of your goal leads directly to success. So turn off your computer, step into the sunny, thought-enhancing fresh air and give it a whirl. We aren't going to give you the answer; doing the exercise yourself will be most exhilarating. R

80 Micro
Peterborough, NH

RUN

The Commodore 64 & VIC-20 Magazine

U.S.A. \$2.95
Canada \$3.50
August 1984
A CWC/I Publication

Program of the Month—
Take Control of Your Sprites

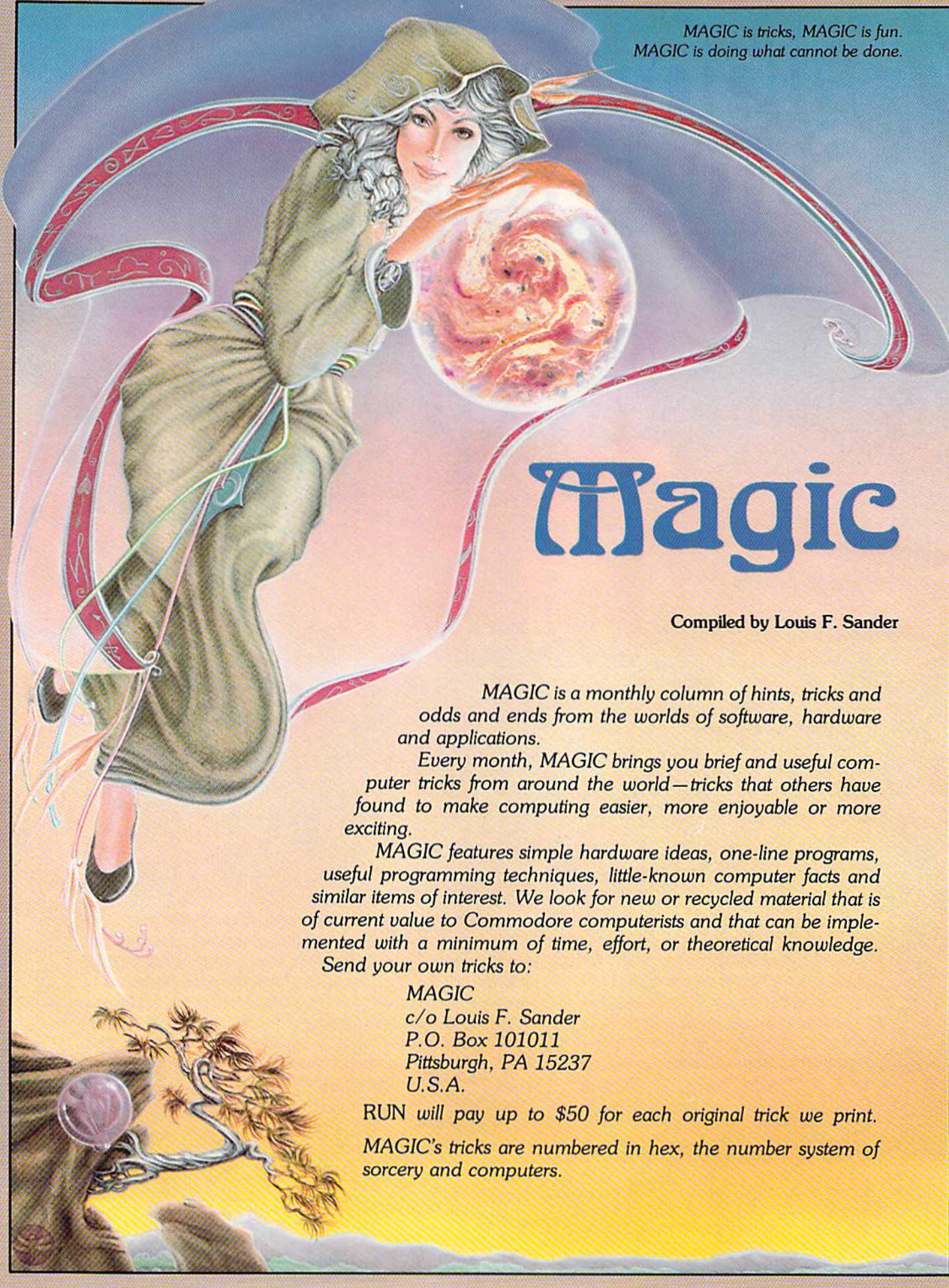
Uncover the Secret Of Buried Treasure!



Also Inside:

- The Robots Are Coming!
- Sound Off with Your Joystick
- Programming Made Easy—Let Your C-64 Do It!





MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Magic

Compiled by Louis F. Sander

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge.

Send your own tricks to:

MAGIC
c/o Louis F. Sander
P.O. Box 101011
Pittsburgh, PA 15237
U.S.A.

RUN will pay up to \$50 for each original trick we print.

MAGIC's tricks are numbered in hex, the number system of sorcery and computers.

Back in March, we noted that Magic seeks tricks from diverse geographical locations. By now you can see our sorcery seeking seems somewhat successful—we've printed tricks from every state in the U.S., not to mention an ever-growing group of tricks from other lands. *RUN's* {CTRL 2} magic seems to have *everyone* under its spell, and the situation shows no signs of {CTRL 9}ing.

Rumor has it that even the astronauts run for *RUN* as soon as they CHR\$(13) CHR\$(19) from CHR\$(32), but of course we have no way of knowing for sure. We can verify the answer to last month's word trick: the hidden incantation is somersault.

This month, Atari users gave us some tricks. So did shamans of the Commodore stripe, and here are their august efforts:

\$AA Debugging tip—You can check the status of any variable in your program, at any point in the program, by pressing the stop key (*not* stop/restore!), then typing PRINT, the variable name and hitting the return key. The computer will print the current value of that variable. You can print as many values as you need, or even change values, then restart your program by entering CONT.

Michael Berry
Kewanee, IL

\$AB Son of BURROW—For an amazing surprise on your C-64 or VIC, try entering POKE 214,30 while in Direct mode. Then hold down the CRSR DN key and watch what happens. Don't worry, the screen will return to normal after you've held the key down awhile.

David D. Panzer
Ft. Knox, KY

\$AC Scratch remover—*The 1541 User's Manual* says the following form of the Load command will cause the last program accessed on the disk to be loaded.

LOAD "*",8

This command is also useful in recovering a program file inadvertently scratched, providing no other programs have been accessed from that disk since the deletion occurred. This worked very well with my VIC-20 and should work equally well for the C-64. To test this trick, try the following.

- Set up a short test program.
- Save the program to disk.
- Execute the Verify command to ensure the disk copy is all right.
- Type NEW to delete the program from RAM.
- Delete the disk version of the program.
- List the disk directory to verify the program has been deleted.
- Type LOAD "*",8
- Type LIST to verify that the program has been recovered.

Now the program is ready to save to disk again.

O. F. Brissette
Pawtucket, RI

\$AD Wedge tricks—When using the C-64 Wedge, if you hit the space bar while listing your directory, the scrolling will stop. Hitting the space bar again will resume

the listing. Pressing the stop key will terminate it.

To load a program while using the Wedge, just get its directory entry on screen, then press the stop key. Move your cursor to the first position on the same line as the directory entry, then type a slash or an up arrow. Press the return key, and, presto, your program will load. If you used the up-arrow key, your program will run automatically.

Hiram Rivera
Stillwater, OK

\$AE Disk buyer's guide—When buying floppy disks, look at the exposed part of the disk around the center hole. Quality disks have a clear or colored reinforcement ring in this area, to protect them from wear caused by the disk drive. Disks without the protective ring might not last as long.

Russell P. Marsella
Lincoln, RI

\$AF Making boots—When you want to easily load and execute a machine language program, a small Basic program called a boot can be very helpful. There's a little trick to bootmaking; its necessity is illustrated in the following program, which will never get to line 20.

```
10 LOAD "WAND",8,1
20 SYS49152
```

Line 20 will never be executed because the Program mode Load command causes a program to be loaded, then immediately starts executing whatever Basic program is in memory, retaining the values of all variables from the previous run.

So line 10 will load WAND, then the computer will execute line 10, which will again load WAND and so on, *ad infinitum*. The following program will run properly, since it includes a test to see whether the Load command has been executed.

```
10 IF TEST=0 THEN TEST=1:LOAD"WAND",8,1
20 SYS49152
```

When you type RUN, all variables, including TEST, will be set to zero. The If...Then will succeed, TEST will be set to 1 and WAND will be loaded. When line 10 is executed again, the If...Then will fail, so control will transfer to line 20 and the SYS will be performed.

Errol Lisonbee
Salt Lake City, UT

\$BO More on connectors—Male pc edge connections for the expansion ports can be made from pc breadboards. For the VIC-20, Radio Shack bread-board 276-152, 44-pin, .156 spacing will fit perfectly.

For the 64, Vector makes a bread-board, 3719-1, which has 72 pins on .100 inch spacing and can be cut down to fit. Another source of expansion-port connectors is blown cartridges (see your dealer).

William C. LaRue
Boise, ID

\$B1 Saving machine language—You do not need a monitor program to save a machine language program or block of data stored in RAM. First determine the starting and ending addresses of the memory block you wish to

save, then add 1 to the ending address. Poke the low and high bytes of the starting address ($HI = INT(ADDRESS/256)$; $LO = ADDRESS - 256*HI$) into memory locations 43 and 44. (The low byte goes into 43 and the high byte goes into 44.)

Next, Poke the low and high bytes of the end address into memory locations 45 and 46, respectively. Finally, save the block with the usual Basic command: `SAVE "programname",8`. When the Save is finished, you must reset your computer, since your Pokes have hopelessly upset some important Basic pointers.

J. Winnie
Kila, MT

\$B2 Improved automatic Save routine—When you are developing a program and regularly putting new versions onto the disk, you can automate saving and backing up by using the following lines.

```
59999 END
60000 PMS = "programname":OPEN 15,8,15
60010 PRINT#15,"S0:" + PMS + ".BKUP"
60020 PRINT#15,"R0:" + PMS + ".BKUP" +
      PMS
60030 CLOSE 15
60040 SAVE PMS,8
```

When you're ready to save your latest version, just enter `GOTO 60000`. Lines 60000–60020 will rename the previously saved version as a backup, and line 60030 will put the current version onto the disk. Of course, "programname" must contain eleven or fewer letters.

James Llanos
Ketchikan, AK

\$B3 Defeating program protection—If you ever try to list a program and the listing terminates suddenly with an empty REM statement followed by a Syntax error, the cause is a shifted L following the REM. You can clear up the list disable by moving the cursor to the colon, then using the space bar to delete the colon and the REM.

Your program should then list perfectly, and unless the program protector was especially sneaky, it should run perfectly, as well.

Paul James
Cleveland, TN

\$B4 Printer hint—When you know you will be making a printed copy of a program you are writing, use character codes (`CHR$`) for such functions as Screen Clear and `CRSR DN`, so your printout will not be muddled with unreadable black dots.

Screen Clear, for example, would be `PRINTCHR$(147)`. It may cost a bit more memory, but it will make your program easier to read and debug.

D. Mataconis
Piscataway, NJ

\$B5 1526 printer tip—One advantage of the Commodore 1526 printer is that it can be used with single sheets of paper. But you may not get as many lines on a single sheet as you do when you use fanfold paper and tractor feed.

When you get towards the bottom of the single sheet, the

printer will stop, with the lighted paper advance button flashing an Out of Paper warning.

To get the rest of your lines on the paper, simply slip a blank sheet in the paper feed behind the sheet you're printing to. Make sure the left side lever is set to the friction position and feed the spare sheet as far as you can. Now press the blinking paper advance button. Printing will continue, and you'll have all your lines on a single sheet.

Don Morgan
Parsippany, NJ

\$B6 1526 printer tip—When using the 1526 printer and the 1541 disk drive, there is a tendency for the disk drive to hang up with a Searching for XXX message on the screen. Nothing seems to help except turning the system off and back on.

I've found the trouble to be with the sequence in which the various units are turned on. The manuals recommend you turn the computer on last, but if you have this problem, disregard the manuals and turn the printer on last. For me, that is the secret to avoiding disk hangups.

Barney H. Roberts
Huntsville, AL

\$B7 ML monitor hard copy—The following simple line will cause a machine language monitor's output, prompts and all, to be printed on your printer.

```
OPEN 4,4:CMD4:SYS xxxx:PRINT#4:CLOSE4
```

The xxxx refers to whatever SYS number activates your monitor. When you press the return key, screen output will be directed to the printer instead.

I've used this with Hesmon, Minimon, Micromon, Monitor \$0C00, Monitor \$8000 and Supermon64.V1, all with excellent results. With Supermon, and perhaps with others, you must first run the monitor, exit back to Basic with the X command, then use the command line above.

Dale Sowell
Senatobia, MS

\$B8 Easy Script trick—Working with Easy Script, I have learned to appreciate more and more the power of this program. It even plays music! To hear it, go into Command mode by pressing the f1 key. Once in the Command mode, hold down the CTRL key while you press the 3 key. Incredible!

Steven Cavener
Oklahoma City, OK

\$B9 Screen dump—The following short program works on a C-64 with an Alphacom printer, but should also work or be easily adapted to other printers.

```
10 OPEN4,4,7:FORN = 1024TO2023:P = PEEK(N)
20 IFP < 32ORP > 95THENP = P + 64:GOTO40
30 IFP > 63ANDP < 96THENP = P + 32
40 PRINT#4,CHR$(P);:NEXT:CLOSE4
```

In the Open statement, the 7 calls for upper-/lowercase mode. An 8 here will print the uppercase/graphics mode. The If...Then statements convert screen codes to ASCII codes.

The program can be typed in or loaded and then run off the screen with the cursor. Compose anything you desire

(continued on p. 118)



(from p. 16)

on the screen, type RUN and hit the return key. Remember, if the Run command is on the last line, it will scroll everything up one line.

This program works well when added to "Spriten Up!" (RUN, February 1984) to make a hard copy of the sprites you design.

David Lutz
Cave Creek, AZ

\$BA Random numbers—Type in the following program and run it a few times. Each time you run the program, write down the numbers. Now turn off your computer and do it again. You might be surprised by the results, which show an identical sequence of numbers each time.

```
10 FOR A=1 TO 6 : B=INT(RND(1)*100) : PRINT B : NEXT
```

Change the RND(1) to RND(0), then repeat all your steps. You'll see that a zero value in RND's argument makes for a lot more randomness. Positive values should be used as arguments for RND only when you want the series of numbers to repeat, as in testing a program.

Ian Lauder
KalisPELL, MT

\$BB Input hint—The ominous appearance of ?REDO FROM START can be unsettling to the user who doesn't realize that the computer merely wants numeric rather than string input (or vice versa). The following routine allows a program to accept inputs in either form, displaying them in a chosen format. The technique permits flexibility in data entry, while ensuring that the output is standardized.

```
100 INPUT "MONTH";MS
110 FOR M=1 TO 13 : READ MOS
120 IF LEFT$(MS,3)=MOS THEN 150
130 IF VAL(MS)=M THEN 150
140 NEXT
150 PRINT MOS
160 PRINT:RESTORE:GOTO100
170 DATA JAN,FEB,MAR,APR,MAY,JUN,JUL,AUG,SEP,OCT,
    NOV,DEC,???
```

In my example, months can be entered in numeric or alphabetic form and abbreviated or spelled in full, and the

program returns their three-letter abbreviations. Simple changes will make the program return the numeric form of the month, or even its fully spelled name. Of course, the technique isn't limited to months of the year, but can be used in a wide variety of situations.

Eddie Johnson
Albuquerque, NM

\$BC GET trick—Sometimes you might want to display a screen for a certain length of time by using a For...Next loop. But other times you may not want to waste time waiting for the loop to end. The following code allows a pre-timed wait to be terminated by a keypress.

```
100 FOR I=1 TO 500 : GET AS : IF AS="" THEN NEXT
110 Continuation goes here.
```

Stan Tomasevich
Lexington, KY

\$BD For...Next tip—When using Basic, you must be very careful with the following.

```
10 FOR H=1 TO 20
20 NEXT H
30 PRINT H
```

The final output, which you might expect to be 20, will be 21. Not only will that value be printed, but every time H is called, until it is changed, the value 21 will be returned.

Russell P. Marsella
Lincoln, RI

\$BE REMarkable idea—As your program collection grows, it becomes impossible to remember where you got each program. This, of course, can be frustrating when you must know who wrote a program or when you must look up the magazine article that contains the documentation. A simple solution is habitually to include source information in a low-numbered REM statement. For example:

```
0 REM ** RUN, AUGUST 84, PAGE 10 **
```

Charles L. Moore
Fairfield, AL

\$BF Screen Poke hint—When you assign variables to the screen position of a character, and use the common $S = X + [\text{screen width}] * Y$

the X and Y take 14 bytes of memory, and the math slows down the computer.

Instead, use only one variable, for example, S. Add or subtract one to move horizontally, and add or subtract (screen width) to move vertically. It's faster, and it can save needed memory in a small VIC. The screen width is, of course, 22 in a VIC and 40 in a C-64.

Timothy C. Shea
Burlington, VT

\$CO Custom character trick—When using custom characters on the VIC, you can also use the regular characters at will, just by printing their reversed versions. To prove it, type in POKE 36869,255 to get into Custom Character mode.

As you subsequently press keys, you'll see whatever random RAM patterns make up your pseudo-custom char-

acters. Now press {CTRL 9} to put the VIC into Reverse mode, and notice that the keys print their normal characters.

Joseph Chan
Barrington, RI

\$C1 Reverse field hint—When working on a program that uses reversed lettering, you don't have to use the CTRL 9 reverse field symbol inside quotes to enable the Reverse Field mode. POKE 199,1 will cause the subsequent printing to be in reverse field. POKE 199,0 will undo the reverse, as will printing a return.

Paul James
Cleveland, TN

\$C2 Lining up numbers—There are many ways to format numbers, which in the noncomputer world are always lined up according to the position of their decimal points, but which computers love to left justify. The following is a simple program to align the decimal points in numbers containing from one to three digits:

```
10 FOR I=9 TO 109 STEP 50
20 PRINT SPC(ABS(I<100)) SPC(ABS(I<10)) I
30 NEXT I
```

This is useful when printing highly variable numbers to a particular screen location and, of course, when printing out columns of numbers.

Roy E. Kannaday, Jr.
Littleton, CO

\$C3 Joystick trickery—With an Atari-style joystick in port 1, you can slow down screen printing by moving the joystick to the left. This duplicates the action of the CTRL key and is very useful when reading long program listings.

Mike Zuerlein
Casper, WY

\$C4 Typing tip—If you are a one-handed typist, you know that it's difficult to use the CTRL RVS key, because it slows you down. Well, now you need only one hand, and you don't have to stretch clear across the keyboard.

Just press the CTRL and R keys. It works in or out of Quote mode, and it's very handy if you are using your hand to spot text on a listing.

Doug Hanley
Las Vegas, NV

\$C5 Keyboard tip—If you've just accidentally deleted a line and the full line is still on the screen, just move the cursor up to the line number and press the return key. The line will be added back into the current program in memory, at the appropriate position.

Glenn Davison
Aurora, CO

\$C6 Moving program lines—If you need to move a line from one place in a program to another, first list the line you wish to move; next, move the cursor up to the line number and type the new line number over the old one; then press the return key. Finally, delete the original line by typing only the line number and pressing the return key.

Caution: If the new line number is longer than the orig-

inal line number and its following space, you'll have to add spaces to the beginning of the line before you type in the new line number. The original line will automatically return to its original format.

Glenn Davison
Aurora, CO

\$C7 Entering long lines—Entering the 80th character on a C-64 program line (or the 88th on a VIC line) can be mighty frustrating. As soon as you type it in, the cursor jumps down to the next line, where pressing the return key fails to enter what you just typed.

There are two ways around the problem. The first is simply to move your cursor back to the program line, then press the return key. The second is to leave out some character short of the 80th, such as character number 75. Then, after you're done with number 80, the cursor will still be on the line you want. Just move it back to where you left out the character, use the insert key to open up a space and type in the missing character. Then, when you press the return key, the line will be entered perfectly into memory.

Philip J. Ternes
Bismark, ND

\$C8 Flagrant patriotism—Enter this one-liner:

```
1 PRINT "{2 spaces}{CTRL R}{CTRL 1}{11 spaces}{CTRL 8}
{12 spaces}{CTRL 3}{11 spaces}":POKE 53280,1:POKE 53281,1:
GOTO 1
```

Now run the program, count to ten and press the stop key. Then use your cursor controls and the space bar to wipe out the Break and Ready messages. Press [CTRL 2] and see the flag of Belgium. Anyone for the Union Jack?

R. Rock
Montgomery, AL

\$C9 Binary to decimal converter—This one-liner will handle any length number you wish to input. In addition, if you change the *21X in the middle of the line to *81X it will handle any length octal number. (To fit the converter on one line, you must abbreviate most of its keywords.)

```
2A=1:FORX=LEN(B$)-1TO1STEP-1:D=D+(VAL(MID$(B$,A,
1))) *21X A=A+1:NEXT D:D=D+VAL(RIGHT$(B$,1))
```

Adding the following two lines gives you a working routine.

```
1 INPUT "BINARY #";B$
3 PRINT D
```

Frank Williams
Tucson, AZ

\$CA Choosing—To allow easy choice of either keyboard or joystick input, you can use the following method. First, insert line 100 during the start of the game.

```
100 P=1: INPUT "JOYSTICK (J) OR KEYBOARD (K)";A$:
IF A$="K" THEN P=2
```

In a single line, you have requested input, limited the value of P to either 1 or 2 and set a default value of P=1 if any key other than K is pressed.

To check for movement, simply insert line 200.

```
200 ON P GOSUB 50,75
```


50,000[†] COMAL USERS!

YOU ARE INVITED TO JOIN THEM

The **ENHANCED** COMAL[†] PAK includes:

- 'LOGO' Turtle Graphics
- 40 Graphics and Sprite Commands
- Run-time Compiler
- FAST Program Execution
- Print Using Auto Formatting
- Program Structures
- Long Variable Names
- Local and Global Variables
- Parameter Passing
- Auto Line Numbering/Renum
- Merge Program Segments
- Stop Key Disable/Enable
- PLUS
- Pocket Reference Card
- COMAL Information Booklet
- Many Sample Programs
- Help Files/Errors File

ALL FOR ONLY \$19.95

For Commodore 64* with 1541 disk drive.
Also available: COMAL TODAY newsletter \$14.95 per year • Sample COMAL TODAY \$2 • COMAL Handbook \$18.95 • Beginning COMAL \$19.95 • Foundations in Computer Studies with COMAL \$19.95 • Structured Programming with COMAL \$24.95 • Captain COMAL Gets Organized \$19.95 • A matching disk for each book is \$19.95 each.

—Send check or Money Order plus \$2 handling to: COMAL Users Group, U.S.A., Limited, 5501 Graveland Ter., Madison, WI 53716, phone: (608) 222-4432.

[†] estimated [‡] Version 0.14 includes best of LOGO, best of PASCAL, best of BASIC, all in one.
TRADEMARKS: Commodore 64 of Commodore Electronics Ltd., Captain COMAL of COMAL Users Group U.S.A. Ltd.

Circle 197 on Reader Service card.

64K MEMORY

FOR
C-64
OWNERS



FOR
VIC-20
OWNERS



• NOW YOU CAN HAVE ALL THE POWER OF THIS MEMORY FOR EITHER THE *COMMODORE 64 OR THE *VIC-20. PLUGS DIRECTLY INTO YOUR EXPANSION PORT.

• LETCO HAS ADAPTED THE POPULAR 64KV MEMORY EXPANDED FOR USE ON THE C-64. USE THIS EXTRA MEMORY TO STORE DATA, MACHINE LANGUAGE PROGRAMS, ETC.

64KV FOR THE VIC **\$109.95**
64KC FOR THE C-64 **\$139.95**

ALSO NEWLY RELEASED FROM LETCO

• ROM ACCESSORY FOR OUR 64KV TO MAKE IT EASY TO PROGRAM BASIC TO USE ALL MEMORY AVAILABLE. INSTALLED NEW OR ADDED TO THE LETCO 64KV **\$29.95**

• DELUXE 4-SLOT EXPANSION CHASSIS WITH EXPERIMENTERS SLOT FOR BLOCK ADDRESS CHANGES. SEPARATE POWER SWITCHES, FUSE, AND A RESET BUTTON FOR THE *VIC. **\$39.95**

• CUSTOM PLASTIC CASE TO FIT *VIC'S EXPANSION SLOT. GREAT FOR YOUR CREATIVE HOME PROJECTS. HAS HOLE FOR DIP SWITCH 7/16" x 5/16" x 1/16" (NO BOARD) **\$9.95**

WRITE:

**LETCO, DEPT. RM6
LEADER ELECTRONIC TECHNOLOGY CO.
7310 WELLS RD.
PLAIN CITY, OHIO 43064**
OR CALL **1-614-873-4410**

WE ACCEPT VISA, MASTERCARD, CHECK OR MONEY ORDER. FOR CHARGE ORDERS PLEASE INCLUDE ACCT. NO., EXP. DATE, AND SIGN.

90 DAY LIMITED WARRANTY ON ALL PRODUCTS
OHIO RESIDENTS ADD 5% SALES TAX

* REG. TM. OF C.B.M. INC.

Here the joystick subroutine lies at line 50 and the keyboard subroutine starts at line 75. Line 200 is an often-overlooked form of branching, yet it uses less space than the usually encountered

200 IF P = 1 GOSUB 50

210 IF P = 2 GOSUB 75

Note that by placing the invoked subroutines near the beginning of the program, you'll speed up the execution time, which is important for subroutines called as often as these usually are.

**Steve Hite
Metairie, LA**

\$SCB Binary one-liner—This lists the binary number sequence from 0000 to 1111 using nested loops. The number of loops can be changed for the required number of bits, which may increase the number of program lines. The program is:

```
10 FORA=0TO1:FORB=0TO1:FORC=0TO1:FORD=0TO1:
PRINTA;B;C;D;NEXT:NEXT:NEXT:NEXT
```

**Lee G. Halphen
Opelousas, LA**

\$SCC Operating tip—Write any numbers you use repeatedly on a wee piece of masking tape and stick them to the top of your keyboard. (Now let's see... is it SYS49152 or SYS49512? Let me consult my wee tape!)

**Marian Hatch
Las Lunas, NM**

\$SCD Naming programs—When you write a long program, it's a good idea to use a short name on the disk until you finish the program. It's faster and easier to type in a short program name. You can rename it after you finish the program.

**Jimmy Burrows
Cheyenne, OK**

\$SCE Data file titles—When you search through a cassette using the Verify command, and try to find a certain program or data file, you're unable to differentiate between them because the computer displays each on the screen in the same way. This makes it impossible to know which are programs and which are files.

One solution is to save programs as before, but to write data files with titles in reverse characters. For example:

OPEN 1,1,1,“(RVS ON) name of file”

Then, when you search through a cassette, program names are in normal type and data files are in reverse characters.

**Jim E. Newton
Mississippi State, MS**

\$SCF Word trick—In the introduction to this month's column, the sentence following the word “somer-sault” contains a hidden secret. Clues can be found in the *last* sentence of the introduction, as well as in both sentences of this month's word trick.

L.F.S.

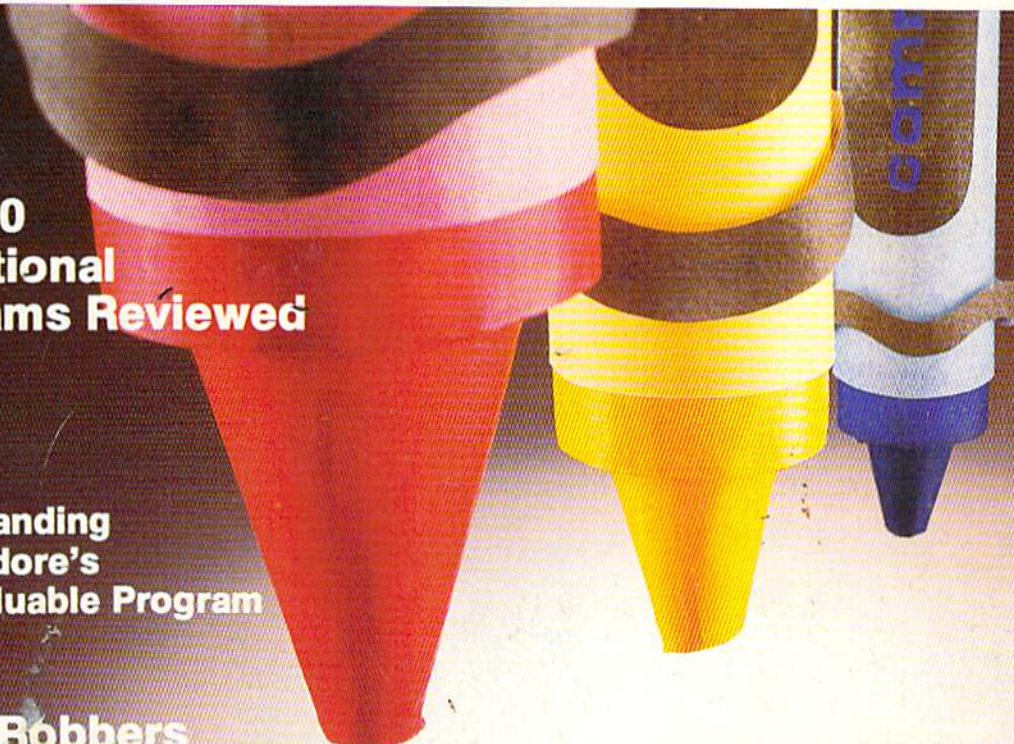
RUN

The Commodore 64 & VIC-20 Magazine

Canada \$3.50
U.S.A. \$2.95
A CWC/I Publication
September 1984

Program of the Month—
Demystify Your Listings

Changing the Way Your Kids Learn



Over 40
Educational
Programs Reviewed

Understanding
Commodore's
Most Valuable Program

Cops, Robbers
And Computers



Protecto Enterprizes Catalog Inside





MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Magic

Compiled by Louis F. Sander

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge.

Send your own tricks and requests for a Trick writer's guide to:

MAGIC
c/o Louis F. Sander
P.O. Box 101011
Pittsburgh, PA 15237
U.S.A.

RUN will pay up to \$50 for each original trick we print.

MAGIC's tricks are numbered in hex, the number system of sorcery and computers.

From their glade in the forest underworld, Magic's woodland sprites keep a weather eye on the happenings outside. They know that mid-August, when this month's *RUN* is mailed, brings the hottest temperatures of the year for most of our readers—it's a time when disk drives fail, magnetic media melt and everyone wishes for a breath of cooler air.

Well, fellow sorcerers, this *is* Magic, and we're going to do something about the heat. September's tricks are a blend of cool moves and icy logic from the frozen lands of the North, with a dash of chilling chicanery from places where summer is winter and autumn is spring.

Our tricks can't cool your computer room, but they can sweep you away to worlds where it isn't so warm. So get out your sweaters, and get ready to hit the keyboard.

\$D0 Typing tip—A fast way to Poke a zero in Direct mode is by typing POKExxxx, then rolling your finger off the comma key onto the period, then pressing the return key.

The computer interprets the period as a zero, and you've saved a few thousand microseconds of finger fumbling.

Robert A. Adler
Montreal, Quebec
Canada

\$D1 Typing tip from Down Under—Hunt-and-peck typists like myself have a problem when typing in programs. With only two eyes, we have to look three places at once—the printed source, the keyboard and the screen.

I dictate my programs into a tape recorder, then play them back with the aid of headphones and a stenographer's pedal-pause switch. Now I load while only having to look at two locations. An added advantage is that I can check for bugs while reading the listing on the screen and listening to the audio tape. The saving in both time and errors is amazing.

John Bath
Darlington, Western Australia
Australia

\$D2 Screen sorcery—On the C-64 only, a single screen line can be erased by entering:

POKE781, LN : SYS59903

(where LN is the line number you wish to erase, from 0-24). You can put this code in a subroutine and use a For...Next loop to clear any group of lines you wish.

Miraculously, it's also easy to copy one line of the screen into another line. If MF is the number of the screen line your text is to be moved from, and MT is the number it's to be moved to, you can move it with:

POKE781, MT:SYS59888:POKE172, PEEK(60656 + MF):POKE780,
PEEK(216 + MF):SYS59848

And finally, to scroll the screen up one line, simply use SYS59626.

Barry G. Adams
Fredericton, New Brunswick
Canada

\$D3 Cursor magic—To find where the cursor lives at any time, use the following subroutine.

20 POKE 783, PEEK(783) OR 1:SYS65520:R = PEEK(781):C = PEEK
(782):RETURN

R is the row and C is the column of the cursor's present location, with the first position of each being numbered 0.

You can similarly position the cursor to any row or column by entering:

30 POKE781, R:POKE782, C:POKE783, PEEK(783) AND 254:SYS 65520:
RETURN

Just set R and C, then GOSUB30.

B.G.A.

\$D4 vic tone generator—Here's a little machine language program that beeps every time a key is pressed. It's written to run in the cassette buffer, so it shouldn't interfere with your Basic program at all. Once the program is Poked into memory, SYS828 will start it, and pressing the stop and restore keys will disable it.

60000 FOR A = 828 TO 861 : READ B : POKE A, B : NEXT
60010 DATA 169, 15, 141, 14, 144, 120, 169, 78, 141, 20
60020 DATA 3, 169, 3, 141, 21, 3, 88, 96, 165, 197
60030 DATA 201, 128, 240, 7, 101, 197, 105, 128, 141, 12
60040 DATA 144, 76, 191, 234

Trevor J. Crawford
Hanover, Ontario
Canada

\$D5 Undocumented characters—There are four graphics characters that slipped through the cracks in Commodore's documentation. They aren't inscribed on the keyboard, nor are they listed on the CHR\$ charts in the manuals, but they *do* appear on some of the screen Poke charts.

They can be accessed only when in Upper/Lowercase mode (which you can get by pressing the Commodore and shift keys simultaneously). Besides being able to type the appropriate key, you can Poke their value or print a CHR\$ code. Here they are.

Name	Keys	Poke	CHR\$ Value
Checkerboard	Shift Pi	94	126 or 222
Herringbone 1	Comd *	95	127 or 223
Herringbone 2	Shift Lb.	105	169 or 233
Check mark	Shift @	122	186 or 250

Strictly Commodore
Calgary, Alberta
Canada

\$D6 Logarithmic operations—Basic's LOG and EXP functions work with so-called natural logarithms, which use the number constant *e* (2.71828) as a base. But most of us are more accustomed to common logarithms, those based on the number 10. You can easily define a function that will calculate logs to the base 10 with:

DEF FNL(X) = LOG(X)/LOG(10)

To use the function, execute the DEF statement early in your program. After that, any statement like

variable = FNL(expression)

will set "variable" equal to the common logarithm of whatever number "expression" equates to. Calculating

FNL(1000) will return a value of 3, which any good math student knows is the common log of 1000.

EXP, LOG's sister function, calculates the value of e raised to the power within the parentheses. To define a similar function for 10 raised to the given power, use:

```
DEF FNE(X)=EXP(X*LOG(10))
```

If you try it, you'll find that FNE(3)=1000, which of course is 10 raised to the third power.

Pascha Shum
Saskatoon, Saskatchewan
Canada

\$D7 Colored scrolling stars—You can easily add color to the nice display in Trick \$21 (RUN, March 1984) by entering the following line.

```
1 N=(RND(1)*16)+1:B$=MID$(" -see text-",N,1):PRINTSPC(N)B$  
"***";GOTO1
```

To get the material inside the B\$ quotes, hold down the CTRL key, then press each key from 1-8; release CTRL, press the Commodore key, then again press each key from 1-8. VIC owners should change the 16 to an 8, and should type only the CTRL characters inside the quotes.

Claire Farrell
Dartmouth, Nova Scotia
Canada

\$D8 Modulo math—If you do mathematical work, the modulo function may prove useful. It gives the remainder in a division operation. Using the DEF FN statement will make the modulo function available at any point in your program.

```
100 INPUT "ENTER DIVIDEND";A  
110 INPUT "ENTER DIVISOR ";B  
120 DEF FNMOD(D)=INT((A/B-INT(A/B))*B+.5)  
130 PRINT A" MODULO "B" = "FNMOD(D)
```

Peter L. Vogel
Port Coquitlam, British Columbia
Canada

\$D9 Preserving variables—When using the Run command in Basic, all variables are set to 0. If you want to start a program without clearing any variables, you can use the GOTO command in Immediate mode (e.g., GOTO 100). This trick works on any Commodore computer.

Andrew King
Burnie, Tasmania
Australia

\$DA Loading machine language—When you want to load some machine language while a Basic program is in memory, you're faced with a dilemma. Since loading the ML disrupts some internal pointers, you have to use the New command, which removes your Basic from memory, after the program has loaded.

You can avoid the problem by temporarily adding the following two lines to your Basic program.

```
0 END  
1 LOAD "programname",8,1
```

Programname, of course, is the name of the ML program you want to load. To load it, just enter RUN 1. Since

your program is now being loaded from Program mode, there's no need to use the New command. (Program mode loads don't disrupt the pointers.) Line 0 will prevent your Basic program from being executed again after it's loaded.

If you want to load ML from a Basic program and have the Basic continue after the ML loads, use:

```
0 IF F=0 THEN F=1:LOAD "programname",8,1
```

The first time you run the program, F has the value 0 and the file will be loaded. Once it's loaded, the program will start running all over again, but with the values of all variables intact. Since F=1 at this point, line 0 will be skipped and the rest of the program will run as usual.

Barry G. Adams
Fredericton, New Brunswick
Canada

\$DB Loading from Program mode—When one Commodore program loads another, the second must be shorter than the first, or great confusion ensues. (The purpose of this restriction is to allow the second program to use variables that have been set up by the first one.)

If you're loading from tape, you can get around the restriction by entering:

```
600 POKE631,131:POKE198,1:END
```

This has the same effect as pressing the shifted run/stop key.

Geoff Shukin
Saskatoon, Saskatchewan
Canada

\$DC Tape load timesaver—As many of us know, programs are recorded twice on each cassette, following a 15-second header. The dual recording scheme is used for error correction, but if there are no errors, the whole program is in memory as soon as the first copy of the program has been read.

You can use this fact to your advantage in shortening the time it takes to load a program. To cut loading time almost in half, use the following line before you use any variables in your program.

```
10 POKE 45,PEEK(831):POKE 46,PEEK(832):CLR
```

Now when you are loading the program, press the computer's stop key any time after the header and the first program copy have loaded, then run the program normally. Line 10 will compensate for your failure to load the second copy. The proper stopping point is just over half way between the Found and Ready prompts. You can use the tape counter to find this point once for each program; then write it on the cassette for future reference.

Derek Richards
Papakura, New Zealand

\$DD Cassette error hint—If you experience numerous errors when saving, verifying or loading with the Datassette, a possible cause might be conflict with the C-64 DOS wedge program.

If you're using that program with a disk drive, enter @Q before using the Datassette. This command turns off the wedge program and may clear up your errors. To re-ener-

(continued on p. 120)

Magic

(from p. 10)

gize the wedge, enter SYS52224, then type @#8 [return].

Other problems with Datasette errors can usually be eliminated by cleaning and demagnetizing your recorder heads, and/or by using a bulk eraser on your cassettes.

Adam Szymczak
Brantford, Ontario
Canada

\$DE Cassette labels—Every stationery store sells $\frac{3}{8}$ × 3½-inch file-folder labels, which work very well with Datasette tapes. I put one on each side of my cassettes and on the edge of my hard plastic storage boxes. The labels are available in white and with color-coded stripes. A packet of 248 costs around \$3.

Maureen Swanson
Kitimat, British Columbia
Canada

\$DF Easy disk loads—Loading a program from the 1541 disk drive can be made simpler in many cases by using the program's directory entry. List the directory to the screen, then move your cursor to the desired program. Type in an abbreviated Load command (L shift O) and a comma 8, obliterate PRG, then press the return key. Your program will load immediately. Here is a sample directory load.

L(shifted O) "Filename",8(spaces over the PRG) (return)

If the program is in machine language and you use a non-relocating secondary command, the following example avoids a syntax error.

L(shifted O) "Filename",8,1 (return) PRG

If the program is in Basic, use the following example to avoid a syntax error and having to space over the PRG.

L(shifted O) "Filename",8: (return) PRG

Chris Johnson
Clearbrook, British Columbia
Canada

\$EO Disk disaster prevention—If there is an asterisk to the right of a filename on your disk directory, that file is corrupt and should be removed from the disk. But *don't* scratch it, or you may be courting disaster.

Instead, do a disk validation, which will remove the corrupt file. If you're using the wedge program, @V will validate your disk. Otherwise, enter the following.

OPEN15,8,15,"V":CLOSE15

Robert A. Adler
Montreal, Quebec
Canada

\$E1 Disk error detection—If the red LED on your disk drive starts flashing, some sort of disk error has occurred, and you can easily tell which error it is. While the light is flashing, add the following line to your program.

0 OPEN15,8,15:INPUT#15,A,B\$:PRINTA,B\$:CLOSE15:END

Then run the program. The LED will go out and the error number, with a brief description, will be printed on the screen.

Complete explanations of each error number appear on pp. 43-46 of your *1541 User's Manual*. By the way, this method won't work in Direct mode, since the Input# command can only be used from inside a program.

R.A.A.

\$E2 Mnumber mnemonic—When Poking to the C-64 screen, you usually Poke color memory as well. If you remember that the C-64's SID chip starts at memory location 54272, you need not memorize the starting location of color memory, which is 1024 locations higher, and you need not calculate any offsets to this start.

Just add 54272 to whatever screen location you're Poking, then Poke the desired color there. For example, POKE 1600,1 will put an A in the approximate center of your screen. In some C-64s, it will be visible, but in others it won't, because its color is the same as the screen color. In either case, you can change its color to white by entering:

POKE 1600 + 54272,1

R.A.A.

\$E3 VIC downward scrolling—To scroll the VIC-20's screen downward, enter the following.

PRINT"{{HOME}}{CRSR DN}}{CRSR LF}}{INSERT}":POKE 218,158

Each time it's executed, the entire screen, *except the top line*, scrolls downward one line.

Of course, the technique is best used in Program mode. You can execute the trick code as many times as you want, scrolling down one more line each time. Here's an elegant example of the trick in use.

```
10 PRINT "{SHIFT CLR}"
20 PRINT "THE LADDER OF SUCCESS"
30 FOR I=1 TO 20: PRINT "{HOME}}{CRSR DN}}{CRSR LF}}
  {INSERT}":POKE 218,158: NEXT
40 FOR I=1 TO 20: PRINT: NEXT: FOR I=1 TO 20: PRINT:
  FOR J=1 TO 200: NEXT J,I
50 GOTO 10
```

This trick also works on the C-64, but with bugs. Can anyone figure out a bug-free version?

Harold J. Wallace, Jr.
Macclenny, FL

\$E4 Abbreviations—You probably already know that Commodore Basic lets you enter most keywords by pressing the first letter of the keyword then shifting the second letter. But if somebody told you that this is a good way to save memory space, then please tell them to catch the next serial bus out of town.

The Basic abbreviations are a convenient way of entering programs from the keyboard, since they require fewer key-strokes than typing out the whole word. Sometimes, they also allow you to squeeze more information into a single program line, which is generally limited to four screen lines on the VIC and two screen lines on the 64.

However, the abbreviations *do not* save memory space in the computer. When Basic receives a program line, Basic automatically converts keywords into single characters, called tokens.

For example, the token for the Print statement is 153, which is stored in one byte of memory. Regardless of whether you type PRINT (5 characters) or ? (1 character),

the resulting program line will always store the instruction as one character. Thus, unfortunately, there is no saving of memory space.

And speaking of abbreviations, please remember that you cannot use a question mark in abbreviating PRINT#. The latter command is used when you want to send information to a peripheral such as a disk drive, Datasette or printer, and must specify a file number. The correct abbreviation for the Print# statement is P(shift R), which Basic stores as token number 152.

If you try to abbreviate Print# as ?#, it will be tokenized as 153 (the token for Print), followed by a 35 (the code for #). That will yield a syntax error instead of the desired result.

There is one sneaky way around this restriction—simply type the program line using ?# and press the return key. Next, list that line, move the cursor back up to it and press the return key again. The second time, the Print# statement will be spelled out in full, and will be properly tokenized.

You also have to be careful with the Get, Get#, Input and Input# statements. Get# and Input# are used to obtain data from peripherals, much as Print# sends information to them. The Get statement is abbreviated G (shift E), but that abbreviation cannot be used for GET#. GET# has no abbreviation.

Surprisingly, the commonly used Input statement also has no abbreviation, but the rarely used Input# statement is abbreviated as I (shift N).

Ian Adam
Vancouver, British Columbia
Canada

\$E5 INTformation—Trick \$69 (RUN, June 1984) informed us that some statements and functions automatically perform an INT function before further processing. A little simple experimentation indicates that truncating to an integer is automatic in at least the following cases, and possibly others.

Array Subscripts	MIDS
CHR\$	PEEK
DIM	POKE
GOSUB	RIGHTS
GOTO	SPC
LEFT\$	TAB

I.A.

\$E6 The On statement—One of the most underutilized Basic words is ON. This simple little statement can be used to make multiple-choice branching decisions. How often have you seen a program that suffers from a long list of conditional branches, such as:

```
10 GET AS:IFAS="" THEN GOTO 10
20 IF AS = "A" THEN GOTO 1000
30 IF AS = "B" THEN GOTO 1100
40 IF AS = "C" THEN GOTO 1150
50 Etc, etc, etc.
```

All of this can be greatly simplified by using one appropriate test:

```
10 GET AS:IFAS="" THEN GOTO 10
20 ON ASC(AS) - 64 GOTO 1000, 1100, 1150, etc., etc.: GOTO 10
```

If AS is not one of the letters specified, then the first GOTO command will be ignored.

There are many other ways to use the On statement. The only restrictions are that the expression being tested cannot be a negative number, nor a positive number greater than 255. Either of these conditions will generate an error message.

I.A.

\$E7 Somewhat-random numbers—When you need a quick random integer that doesn't have to be perfectly random, a simpler and faster way than using the RND function is to look at the system clock. You can replace:

```
X = INT(256 * RND(-1))
```

with:

```
X = PEEK(162)
```

This yields an integer value ranging from 0 to 255. It isn't perfectly random, since it cycles from 0 up to 255 every four seconds, but it's fine for a quick random guess.

If you need a smaller integer, say from 0 to 15, you can use a Boolean operator:

```
X = PEEK(162) AND 15
```

If you want only even numbers, you can use:

```
X = PEEK(162) AND 254
```

Some combinations will work better than others, so experiment!

I.A.

\$E8 Debugging hint—If you have a program that contains a lot of Data statements and you are reading from these and Poking to other locations, neglecting a comma can mean an Illegal Quantity error. Instead of searching through these statements to find the incorrect one, you may use the data line number locations to locate the bad line. Simply type:

```
PRINT PEEK(64)*256 + PEEK(63)
```

The computer will respond with the line number of the illegal Data statement. This is much easier than searching through all the data.

Andy Bonham
Kingston, Ontario
Canada

\$E9 Joystick substitute—If you have a C-64 but no joysticks, you can simulate joystick operation from the keyboard. It's not the most convenient thing in the world, but it *does* work.

PORT 1	PORT 2
Fire—space bar	space plus M key
Up—1 key	space plus f1
Down—left arrow	space plus Z key
Left—CTRL	space plus C key
Right—2 key	space plus B key

Fred Exelby
Brantford, Ontario
Canada

\$EA VIC memory saver—If you wish to add instructions to a program that uses up all of the available memory in your VIC, then make the instructions a separate

program by adding the following line to the end of the instructions.

1000 POKE198,1:POKE631,131:NEW

Now save the instruction program to tape, followed by your regular program. This one line will load and run your second program and clear out the instructions.

Larry Mudge
Winnipeg, Manitoba
Canada

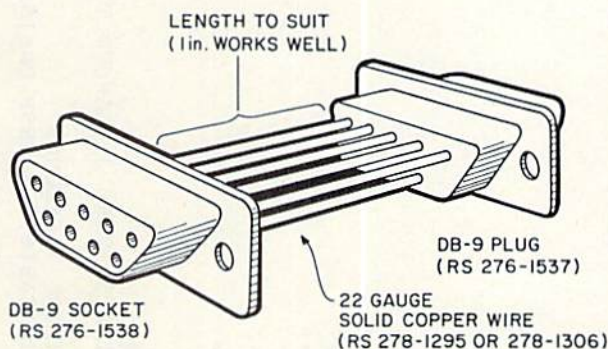
\$EB More on connectors—There's a minor problem in using a hood on a control port connector... the edges of the hood may prevent the connector from being pushed all the way into the port, and will also interfere with any connector in the other control port.

Trimming the edges means that the hood won't be held securely to the connector, and not using a hood at all is bad practice because of the possibility of shorting the exposed contacts. Furthermore, the hood acts as a form of strain relief, helping to keep the wires from being pulled out of the connector.

I have found two solutions: the first involves building a stand-off, as illustrated below; the other solution utilizes newly available insulation displacement connectors and ribbon cable. Amphenol makes the connectors; they are very narrow, so there's no fouling, and they have built-in strain reliefs and don't need to be soldered.

For expansion port connectors, I previously used a Radio Shack pc board, which had 50 edge connectors on each end. I cut them down to 44 fingers with a small X-Acto saw. Unfortunately, this item has been discontinued, so now I've been etching my own, using Radio Shack's direct-etch dry transfers (276-1577) and double-sided copper-clad board. It's fast, easy and a lot cheaper.

John Kula
Victoria, British Columbia
Canada



THE WIRE IS A SNUG FIT INTO THE SOLDER CUPS ON THE CONNECTORS. I THEN USED LIQUID RUBBER (AVAILABLE FROM PLASTIC SHOPS) TO SURROUND THE WIRES CONNECTING THE SOCKET AND PLUG.

\$EC Word trick—The secret in last month's work trick is in the initial letters of words in the target sentence. Knowing the secret, the clues are self-evident.

There's no word trick this month, but October's is a real illyday.

L.F.S.

THOUGHTFUL EDUCATIONAL PROGRAMS



C-64 VIC 20 ATARI

CREATIVITY SERIES



MY BOOK Ages: 4 and up

Your child makes his or her own book!

Using only a joystick, your youngster picks objects from the library (princesses, pirates, houses,

vehicles, people, etc.), colors them and arranges them in the picture!

Older youngsters can then type in a story-line or caption, and the page is saved to disk.

Page after page can be saved. But the fun isn't over yet! Your child can PRINT the book on almost any printer capable of producing Commodore graphics!

The first program in BECi's new Creativity Series. Available soon for the Atari.

C-64 DISK: \$34.95

CHILD DEVELOPMENT SERIES

"The goal of Boston Educational Computing is to provide owners of the most elementary computer systems with educational software that can be used easily by those with little knowledge of computing.

"In its Child Development Series, BECi (pronounced Becky) meets this goal."

*Computes!'s Gazette, January 84



ALPHA-BECi Ages: 2 and up

An alphabet program with 26 screens, each featuring a capital and small letter and an object.

"For a child, watching the colorful objects appear on screen is like opening a present."

(VIC-20 only).



NUMER-BECi Ages: 2 and up

Number identification and color and shape grouping. Five levels and adjustable timing.



ADD/SUB Ages: 5 and up

Addition and subtraction. Up to four digits. Optional objects, carries and borrows, decimal points and hints. Answers entered from right to left, one digit at a time.



MULT-BECi Ages: 7 and up

Multiplication. Up to four digits in multiplier and multiplicand. Answers entered from right to left, one digit at a time.

TAPE: \$19.95 DISK: \$24.95

If ordering directly from BECi, add 5% (or \$2.00 minimum) for shipping.

BOSTON EDUCATIONAL COMPUTING, INC.

Dept. R

78 Dartmouth Street
Boston, MA 02116
(617) 536-5116



Dealer Inquiries Invited



Charge cards and phone orders accepted.

Sing Along
With SID

RUN

Canada \$3.50
U.S.A. \$2.95
A CWC/I Publication
October 1984

The Commodore 64 & VIC-20 Magazine

BEYOND BASIC

New Languages
For Your C-64

WHODUNIT

A Murder
Mystery

Sprite
Graphics
In One
Easy Lesson

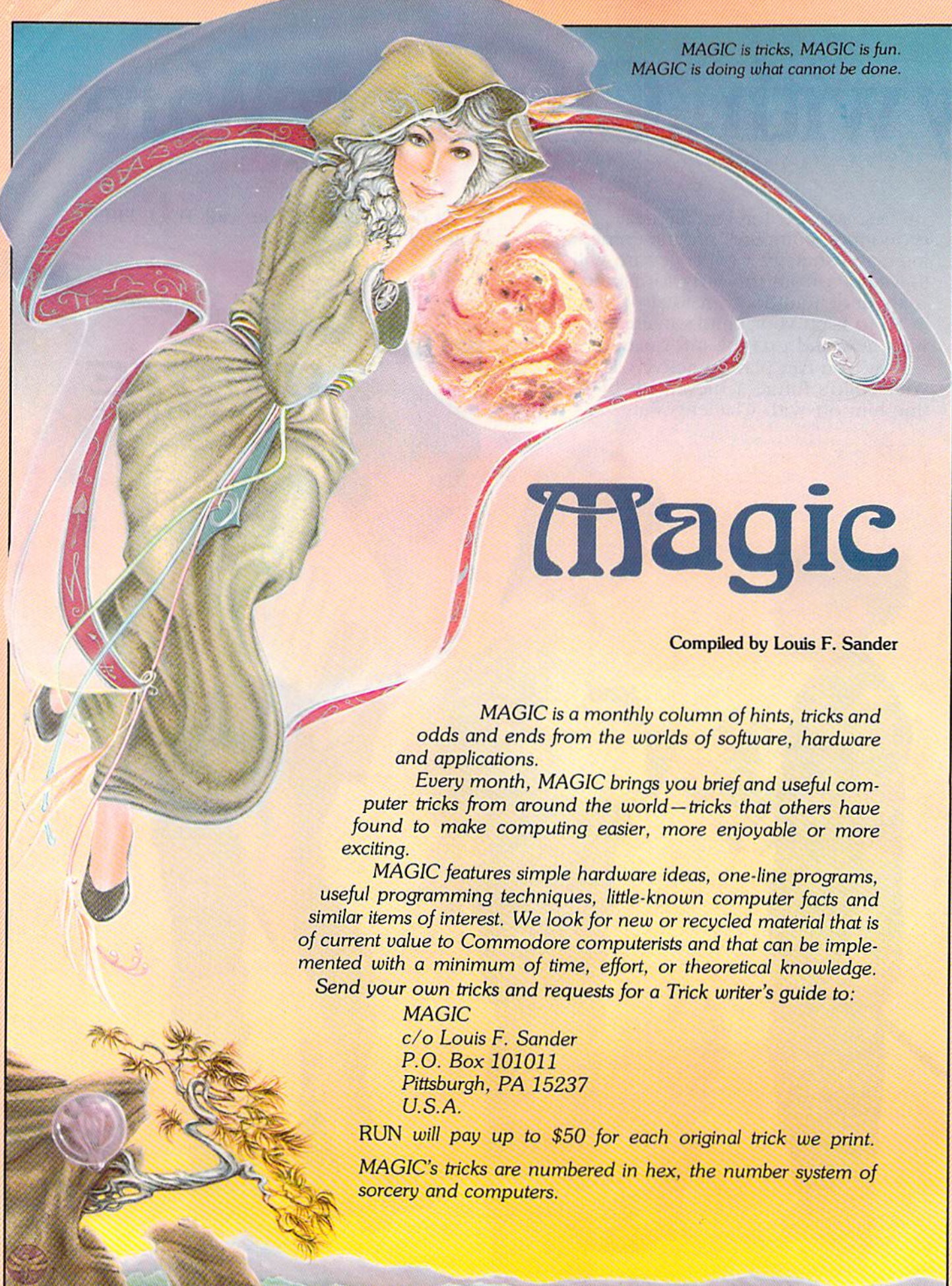
PASCAL

LOGO

FORTRAN

COMAL





MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Magic

Compiled by Louis F. Sander

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge.

Send your own tricks and requests for a Trick writer's guide to:

MAGIC
c/o Louis F. Sander
P.O. Box 101011
Pittsburgh, PA 15237
U.S.A.

RUN will pay up to \$50 for each original trick we print.

MAGIC's tricks are numbered in hex, the number system of sorcery and computers.

With Halloween on the horizon, many minds are mulling matters Magical. Along those lines, we commanded the Coven's computer to analyze our bag of tricks, to see if *RUN's* Magic is basically white or black. With legerdemain logic, with prestidigitous precision and with just a bit of *soul*, the Keeper of the Keywords has come to a conclusion: This column, its proprietor and all its fine contributors are dealing in black and white Magic. Elementary, my dear Gutenberg.

This month's featured subject is video displays—a dozen tricks to make yours clearer and more colorful. To round things out, we pulled the strongest and most mystical tricks from our bag, and added the most unusual ones we could find.

So put that skeleton back in the closet, throw that pumpkin into the cauldron and meditate upon The Book. In other words, drop what you're doing and observe October's awesome offerings.

\$ED Easy hexing—If you can't handle hexadecimal in your head, here's something that will move you in that direction. Just memorize the fact that \$1000 hex = 4096 decimal. Then use that information as a shortcut when using the SYS command to access hex locations.

For example, to access a program at \$9000 hex, just type SYS 9 * 4096. To access one at \$9008, just type SYS 9 * 4096 + 8. If you go one step further and memorize the hex digits for decimals 10–15, it will be easy to use the SYS command to call \$C000 (where there's a 4K block of protected RAM), by typing SYS 12 * 4096. That's a lot easier than trying to memorize 49152. (or is it 49512?—I *never* can remember for sure.)

For more complex SYS calls, remember that \$100 hex = 256 decimal, and \$10 hex = 16 decimal. Then \$CF83 easily becomes 12 * 4096 + 16 * 256 + 8 * 16 + 3.

Eric Haver
Squirrel Hill, PA

\$EE Word trick—Here is a program to tutor computer users in Pig Latin. It translates English to Swine, and after very little practice, most students should have little trouble with Ig-pay Atin-lay. Study hard, because a second language always looks impressive on a job application!

```
10 PRINT "{SHIFT CLR}"
20 AS = "SWHAT" : PRINT
30 INPUT "ENGLISH":AS
40 BS = RIGHT$(AS,LEN(AS)-1) : AS = "-" + LEFT$(AS,1) + "AY"
50 PRINT : PRINT "{2 spaces}SWINE:" ; BS;AS
60 GOTO 20
```

Gary Forney
Oelwein, IA

\$EF C-64 lockup bug—The C-64 has an editing bug that causes you to lose control of the keyboard at certain times. The bug crops up when you exceed two screen lines while entering text at the bottom of the screen. If you attempt to delete back to the second line, horrible things happen, and they are hard but not impossible to correct.

First your keyboard locks up. Then, if there's a program

in memory, the computer attempts to run it. If it ends up on an Input statement, you're in big trouble, since you can make no input. If there is no program in memory, the computer may attempt to load one from tape.

Many solutions to this bug have been advanced, but they don't seem to work consistently. Here are some that we've tried:

- Use one of the following cursor colors when typing, and the bug won't occur: black, white, purple, green, orange, brown, gray 2 or light green.

- Press the shift and 3 keys, which might get a Press Play on Tape message. If it does, press your recorder's play key, then hit the run/stop key.

- Plug a joystick into port 1 and work it actively, pressing and releasing the fire button all the while. This might also get the Press Play message.

- Use your reset button, then use an Un-New program to resurrect whatever you had in memory.

Robert L. Lykins
Anchorage, AK

\$FO Solomon's Basic—Problem: three kids, one computer, all want to use it. Solution:

```
10 PRINT "WAIT WHILE I CHOOSE"
20 FOR I=1 TO 5000 : NEXT
30 INT(X=3*RND(0)+1)
40 IF X=1 THEN PRINT "ALICIA IS FIRST" : END
50 IF X=2 THEN PRINT "KEN IS FIRST" : END
60 IF X=3 THEN PRINT "SARAH IS FIRST" : END
```

Nick Long
Carey, OH

\$F1 Overseas computing—Many computerists who contemplate foreign travel become needlessly concerned about the 220-volt current and their 110-volt computers. In West Germany and Italy, it is easy to purchase a 300-watt, 220-110V stepdown transformer for about \$25. For many years I have run computers and associated equipment from such a transformer, and have had no problems. My transformer currently handles a VIC, 1541 disk, MPS-801 printer and a Panasonic portable TV, again with no difficulties.

If you bring a U.S. TV overseas and use it only with your computer, you will have no trouble, providing you use a stepdown transformer. Trying to use it for TV reception will give a picture but no sound. Most European TVs will work with a U.S. VIC, but will not reproduce sound. The same is true for U.S. TVs used with European VICs.

William J. Dirks
Somewhere in Germany

\$F2 Easyscript trickery—The documentation doesn't mention that Easyscript supports joystick panning in both Edit and Output to Video modes. During Edit mode, the joystick gives full wraparound—left, right, up and down, with good speed. In the Output to Video mode, there is smooth scrolling left, with right wraparound. The fire button advances the text line by line, and can be held down for rapid motion. It all makes reading the output a sit-back-and-relax situation.

Some joysticks may induce a crash, but can be plugged in after the program has loaded. I use a track ball in port #2, without any problems at all.

Colin Johanson
Niddrie, Australia

\$F3 Video vitalizer—The display on a conventional TV set can be greatly enhanced by tying a 1000-ohm potentiometer across pins 1 (luminance) and 4 (video out) of the 64's audio/video plug, then adjusting it for best color and resolution. Radio Shack's DIN plug #274-003 and any wire-lead 1000-ohm trim pot help keep this job neat. (Be careful about the pin numbers. In the DIN system, pins 1 and 4 are next to one another. Ed.)

James G. Cooper
New Albany, IN

\$F4 TV connectors—Many TV sets now on the market have 75-ohm F-type connections on the back of the set. Some don't even have the old standard 300-ohm connections! Rather than use the switch box provided with the computer, use an RCA female to F male adapter, available at most electronics stores. (Radio Shack #278-255.)

Not only will your connection at the back of the set be more elegant, but your picture reception may improve (mine did, dramatically), since you've maintained the same impedance and eliminated the switch box, which may add interference to your modulated signal.

Even if you have only 300-ohm connectors, try using an RCA to F adapter with a 75-ohm to 300-ohm matching transformer, also available at most electronics stores. Your picture quality may improve!

Mike Phebus
Lafayette, IN

\$F5 TV interference tip—The wavy lines that run through your picture can sometimes be eliminated by unplugging the power cord from your TV and plugging it in the other way (unless the plug is keyed, but in that case you probably wouldn't have the wavy lines).

Ed Badger
Merrimack, NH

\$F6 Video interference—You can reduce screen interference by coiling the cord that runs from the computer to the TV or monitor. When you get it the way you want it, tie the coil with string or plastic tie wraps. (Changing the cable length also can be of help. Ed.)

Jerome Beck
Glendora, CA

\$F7 TV tricks—Are you still having trouble with the wavy lines on your TV screen? Try disconnecting the TV antenna terminals from the TV/computer switch on the back of your TV. Better yet, do not use the switch at all. Just disconnect the TV antenna and hook the computer directly to the TV's 75-ohm antenna input connector. If your TV does not have a 75-ohm input on it, use a Radio Shack 75-300-ohm transformer (part #15-1140).

Another trick is to install a Drake TV-75-HP high pass filter between the computer and the TV or to install a Drake LF-2 or LF-6 ac line filter on the computer and/or TV.

Walt Grosch
Milwaukee, WI

\$F8 Money-saving TVI tip—I have a Commodore 64, a 1541 disk drive and a Gemini 10X printer with a Cardco interface. I use a standard TV for a monitor and have been plagued with interference. The interference is the greatest when the disk drive or printer is energized.

I intended to buy a 1701 monitor to solve my interference problems when I discovered an antenna interference filter sold by Radio Shack. I installed this filter (part #15-581 or 15-580) between the TV antenna terminals and lead from the TV/computer switch.

The interference was eliminated, and presentation quality now approaches that of a monitor.

Clifford J. Manspeaker
Warner Robins, GA

\$F9 Ultimate TVI control—For years I had been plagued with the heartbreak of television interference. I tried moving things around, changing plugs, putting foil around the RF modulator and switch—all to no avail. What was I to do? Then the idea of sealing my video system with a good coax line hit me, and it works!

My local Radio Shack precut a cable to the length I needed, put the proper connectors on both ends and sold me the necessary adapters to make everything fit together. I took it home and tried it, and presto!—no more lines or noises.

Bill Haines
Warsaw, IN

\$FA Test patterns—Here is a short program that provides an acceptable substitute for a color bar/dot generator. It is written for the C-64 but is easily converted to the VIC-20.

```
10 PRINT CHR$(147);POKE 53280,0:POKE 53281,0:FOR I=1 TO 24
20 PRINT "{CTRL 9}{CTRL 3}{7 spaces}{CTRL 7}{7 spaces}
   {CTRL 8}{7 spaces}{CTRL 6}{7 spaces}{CTRL 2}{7 spaces}
   {CTRL 0}":NEXT
30 GOSUB 200
40 FOR I=1 TO 24:PRINT "{40 periods}":NEXT
50 GOSUB 200
60 FOR I=1 TO 24:PRINT "{40 SHFT + }":NEXT
70 GOSUB 200
80 GOTO 10
200 GET AS:IF AS=" " THEN 200
210 PRINT CHR$(147);:RETURN
```

To change screens, hit any key. For the VIC-20, change line 10 to read:

```
10 PRINT CHR$(147);POKE36879,8:FOR I=1 TO 22
```

Instead of seven spaces in line 20, use four spaces. Change lines 40 and 60 to read 22 instead of 40 in the Print statement.

Terrill S. Barkley
Columbus, NE
(continued on p. 120)

Magic

(from p. 12)

\$FB Color video setup—The colors coming from your computer are very good, but the control settings on your TV or monitor can make a big difference in their appearance. To set your display correctly, follow the following procedure.

- Use the previous trick to get the vertical color bars on your screen.
- Turn the brightness control all the way up, then turn it down until the background is totally black.
- Adjust the color control until the bars have a good color intensity.
- Use the tint control to set the bars to the correct colors. On the C-64, a more sensitive test can be had by changing the test program so the color bars are purple, orange, brown and light red. (See p. 57 of your user's guide.)
- Go to the crosshatch pattern and set the contrast to a pleasing level.
- Repeat all steps until you have optimized your display.

Gene Casanova
Wauwatosa, WI

\$FC Color convergence test—To maximize the definition in a color display, the electron beams coming from the red, blue and green guns must be properly aligned. The adjustments that align the beams are called static and dynamic convergence, and they should be made only by a qualified technician.

To evaluate the convergence of your own color display, you can use the Test Pattern program from the second previous trick. Put the crosshatch pattern on the screen and turn the color control all the way down. If you see a crosshatch composed of white lines, your convergence is all right. If, however, the lines are not all white, the beams are missing their targets, and your monitor needs its convergence adjusted.

By the way, the crosshatch pattern is also useful for making vertical height and linearity adjustments. These are usually found on back panel controls, and they can adjust the shape of the squares in your crosshatch pattern.

Burt Fisher
Forestdale, MA

\$FD Adjusting picture size—When Commodore computers are used with certain video monitors, you see the Commodore screen area, surrounded by the Commodore border, surrounded by yet another (black) border. As a result, the usable screen display covers only a fraction of the CRT area, and the characters are much smaller than they might otherwise be. Here are the reasons for the problem, along with a suggested cure.

Displays for TV viewing are adjusted so the outer edges of the picture slightly overlap the edge of the CRT. This is called overscanning, and it's done to gain certain technical benefits; losing part of the picture is the price you pay to gain them. Since losing your screen data to overscan would

be unacceptable, Commodore's border keeps the outer screen columns well *inside* the edge of the picture.

But monitors made for text displays do *not* overscan. In fact, they *underscan*, to make sure that no character is ever lost. When you put a Commodore signal into such a monitor, you get more borders than you bargained for—Commodore's overscan-protective border, plus the CRT's underscanned outer edges.

Correcting the problem is simple in many cases. Some high-quality monitors are designed for TV *and* data use, with a size switch on the back panel; just set it properly, and the problem will go away.

Most other monitors have a vertical size control on the back panel and a horizontal size control inside the cabinet. Often, these can be adjusted so the useful screen area fills the CRT. Adjusting them is simple and straightforward for anyone qualified in electronics, but dangerous for everyone else.

The vertical size, or height, control is usually a screw-driver-adjustable potentiometer; just turn it until the top and bottom of the black border move outward off the screen.

Usually, horizontal size, or width, is controlled by an iron slug in a coil near the high-voltage flyback transformer; it may or may not be labeled. If it isn't, your monitor's schematic diagram should help you identify it. Unscrewing the slug will usually expand the picture; don't touch it unless you've worked inside a TV before—there are dangerous voltages *very* close by.

On my Taxan monitor, I removed the slug entirely, which brought the Commodore border just to the edge of the screen. Replacing the iron slug with a brass one moved it even further outward.

If your monitor dealer has a repair department, they should be willing to make both adjustments for you, and to guarantee their work. If you make them yourself, you do so at your own risk, but your actions are unlikely to harm your equipment.

Pat Baker
McKeesport, PA

\$FE Video video—There are times when you might want to connect your computer to two monitors at the same time, to allow simultaneous monitoring in color and black and white, or to monitor a program remotely.

To accomplish this, just insert a phono-plug-to-two-phono-jacks adapter (Radio Shack #42-2436 or #274-303) into the TV connector on your computer or monitor. You'll also need an additional video cable and possibly another computer/TV switch. Note that the video cable is simply an ordinary phono cable, available in various lengths from virtually any music or record store.

David M. Palo
Escanaba, MI

\$FF Video shortcut—If you have both a VIC-20 and a C-64, along with Commodore's 1701/1702 monitor, and are tired of plugging and unplugging the audio and video cables, try the following.

Keep the 64 *and* the VIC plugged in at all times—the 64

into the rear panel set of jacks (with a three-wire cable) and the VIC into the front panel set of jacks (with a two-wire cable). Use the tiny slide switch on the rear panel of the monitor to switch between the two computers.

Karl T. Thurber, Jr.
Millbrook, AL

\$100 80-column video—If you're thinking of buying an 80-column screen expander, be prepared to buy a monochrome monitor as well. Most TVs and color monitors can't display anything more detailed than a 40-column text display, and some of them are hard pressed to do even that. So even if your cartridge puts out perfect 80-column video, your color display probably won't do it justice.

Monochrome monitors generally cost from \$100-\$175 and are specifically designed to have the resolution that an 80-column display requires. The choice of green, amber or white screen is left to your personal preference. Few monochrome monitors include a speaker, so be careful if you intend to use sound with your 80-column text.

Troy Johnson
Milwaukee, WI

\$101 TV color filter—If looking at a black and white monitor gives you eyestrain, put colored cellophane or plastic wrap over the screen. The kind that is used for gift wrapping or Easter baskets works fine and is very inexpensive. Green, blue or yellow seems to work the best.

Carol Forbey
Flint, MI

\$102 C-64 sideways screen scroll—This works, and it is slick. Under some conditions, resetting the screen links will make it even slicker. Put something on the screen, then run:

```
100 FOR I=1 TO 40:PRINT "{HOME}{CRSR RT}";FOR J=1 TO 24:PRINT ""{CRSR LF}{3 SHFT HOME}{DEL}{CRSR DN}{CRSR RT}";NEXT J,I
```

The strange sequence after the second Print statement is required to properly control the Quote mode; it must be performed *exactly* as shown, and if you hit the wrong key, you must start all over. After your keyboard magic is done, the line will list differently than it was typed, and it *cannot* be edited.

Eric the Juggler
Pittsburgh, PA

\$103 Resetting screen links—If you've ever drawn fancy boxes or displays that extend to the edge of your screen, you've noticed that it seems impossible to print inside that box or display. The reason is that the operating system remembers which line overlapped the 40-column screen and prevents the normal Print statements from putting anything on that line. Frustrating!

The easy solution is to reset the screen links once the initial

fancy graphics are printed. Call the following subroutine, and you'll be able to print anything on any line.

```
1010 FOR Q=217 TO 242
1020 IF PEEK(Q)<128 THEN POKE Q, PEEK(Q)+128
1030 NEXT:RETURN
```

The above Basic routine works well but is somewhat slow. If you want to speed things up, use the following machine language version. After running the Basic loader, you can call the relinker at any time by entering SYS 830.

```
1000 FOR J=830 TO 843:READA:POKEJ,A:NEXT
1010 DATA 162,0,181,217,9,128,149
1020 DATA 217,232,224,25,208,245,96
```

Bruce Jaeger
St. Paul, MN

\$104 Screen blanking—To slightly speed up your C-64, you can make the screen turn blank when it is not needed. When the screen turns blank, it appears to be the same color as the border. To do this, enter:

```
POKE 53265,PEEK(53265) AND 239
```

To return it to normal, enter:

```
POKE 53265,PEEK(53265) OR 16
```

Pressing the stop and restore keys will also return the screen to normal. While the screen is blank, it can still be written to, but the writing will be invisible. The timesaving while the screen is blank can vary from almost nothing to over ten percent, so it's worth considering whenever time is a factor.

Mark Mankins
Malvern, OH

\$105 Setting color memory—To set the C-64's color memory to a particular color, you may see something like this being done:

```
POKE53281,X:PRINT "{SHFT CLR}";FOR I=55296 TO 56295:
POKEI,Y:NEXT
```

where X is the screen color and Y is the desired color for Poked characters.

But when you clear the screen, the computer resets all of color memory to the current screen color. With this in mind, the following routine will give the same result as the one above.

```
POKE53281,Y:PRINT "{SHFT CLR}":POKE53281,X
```

Color memory will be set to Y, and the blank screen will be the color X. This routine takes about four jiffies on the C-64, saving several seconds over the other method.

You'll notice a little flicker when the screen is cleared, and if it bothers you, there's a simple way around it. Just turn off the display before initializing color memory, using

```
POKE 53265,PEEK(53265) AND NOT 16
```

Turn it back on afterwards with:

```
POKE 53265,PEEK(53265) OR 16
```

The result will be a fast, invisible setup of every location in color memory.

Michael McGuire
Gardner, KS

\$106 Screen Pokes simplified—The numbers used here are for the Commodore 64 but the idea is applicable to the VIC-20 as well.

When writing a program that uses graphics Poked to the screen, you normally Poke the screen memory location with the character code and then Poke the color memory location with the color code.

For instance, the following program lines put a white ball in the upper left-hand corner of the screen and a red ball in the lower right-hand corner.

```
50 POKE 1024,81:POKE 55296,1
60 POKE 2023,81:POKE 56295,2
```

This process requires you to calculate both the screen and color memory locations.

To make this programming task simpler, at the beginning of each program I set a variable equal to the difference between color memory and screen memory (54272). This difference is the same for any screen location. The following example gives the same result as above.

```
10 CO = 54272
```

```
50 POKE 1024,81:POKE 1024 + CO,1
60 POKE 2023,81:POKE 2023 + CO,2
```

Here you must only deal with the screen memory map and can totally forget about the color memory map.

54272 is also the start of the C-64's sound locations, so this variable can be used in music routines as well.

Barbara H. Schulak
Iowa City, IA

\$107 Renumbering hint—A renumbering utility can be a godsend, but when you renumber, you lose track of the starting lines of your program's various parts. You can find them again if you put dummy lines, like the following, at the end of your program.

```
63950 END
63952 GOTO 1000 : REM START SUBS
63954 GOTO 2000 : REM PRINT MENU
63956 GOTO 3000 : CALCULATE TOTAL
```

The End statement prevents these lines from being executed. The renumbering automatically changes the GOTOs, so when you examine these lines, you'll know where everything is. If you've put these lines at the end of the program, examining them should be a snap.

Terry Neely
Norcross, GA

\$108 Debugging tip—If you're getting a Syntax error from a multi-statement line, but you can't find your error, put a dummy Print statement after each statement on the line. If the Print statement works, you know that the error must lie after it. Once you've found the error, you can remove the dummy Print statements.

A. Lubin
Monsey, NY

\$109 Engineering notation—Sometimes it is convenient to express numbers in engineering notation (not scientific notation). In this notation, the mantissa is between 1 and 1000, and the exponent is always displayed in multiples of 3, so the units of measure are easily read. For example: E-6 = micro, E3 = kilo, E6 = mega and so on. Below is a routine that displays any number X in engineering notation.

```
9000 IF X = 0 THEN E = 0: M = 0: GOTO 9030
9010 Z = LOG(ABS(X))/LOG(10): E = INT(Z): M = 10^(Z - INT(Z))
9020 IF E/3 < > INT(E/3) THEN E = E - 1: M = M*10: GOTO 9020
9030 M = M*SGN(X): PRINT M;"E";E
```

To test this routine, add this statement:

```
10 INPUT "X=";X
```

For example: 0.00137 becomes 1.37E-3, as in milli(grams), and 6.25E-7 becomes 625E-9, as in nano-(seconds).

Imre Auersbacher
Belleville, NJ

\$10A Software reset button—Do you need a reset button for your C-64 or VIC-20 but don't have the money to buy the hardware? Good news—you can have one absolutely free! To use the restore key as the reset button, do the following.

```
POKE 792, PEEK(65532)
POKE 793, PEEK(65533)
```

This establishes the NMI vector in RAM to be the same as the reset vector. The only drawback is that as soon as you use the restore key as the reset button, the NMI vector gets restored. So, after every use, perform the two Pokes again to reestablish the restore key as the reset button.

Bobby G. Roberts
North Highlands, CA

\$10B Stack pointer—To determine the stack pointer's position from Basic, enter:

```
POKE 2,96 : SYS 2 : SP = PEEK(783)
```

The Poke command puts an RTS where you can get at it, SYS 2 executes the RTS and 783 will then hold the stack pointer. The variable SP will hold it, too.

Eric Haver
Squirrel Hill, PA

\$10C Buck writing—On many occasions I have wanted to print dollars and cents, rounded to the nearest cent, with two decimal places. The following one line, added to a program, does it, except for negative numbers:

```
10 V = INT((V + .005)*100): V = (V + .1)/100: VS = STR$(V): VS = LEFT$(VS, LEN(VS) - 1)
```

where V = the original value and VS = the string representation of the value.

When you print the variable V\$, any value of V will be printed with two decimal places, rounded to the nearest cent.

Alfred G. Swenson
Renton, WA

\$10D More buck writing—This one handles negative numbers, but fails on items less than a dime.

```
20 V=INT(V*100+.001):V$=STR$(V):V$="S"+LEFT$(V$,LEN(V$)-2)+".":RIGHT$(V$,2)
```

To print the output in a neat column, use:

```
Q=LEN(V$):PRINT TAB(20-Q)V$
```

The 20 in this line is the position of the last character in V\$.

Marilyn Sallee
Alliance, NE

\$10E Still more buck writing—This one handles everything; with four times as many lines, it should.

```
100 IF X<.005 AND X>-.005 THEN X$="0.00":GOTO 140
110 X=X+.005*SGN(X):X$=STR$(X)
120 FOR I=1 TO LEN(X$):IF MID$(X$,I,1)=".":THEN X$="S"+LEFT$(X$,I-1):GOTO 140
130 NEXT I:X$="S"+X$+"00":GOTO 140
140 PRINT X$
```

Kevin O'Connor
Union, NJ

\$10F Homemade fanfold—When we want to use a few sheets of special paper in our printer, we sometimes tape them together like fanfold, so we don't have to stop printing at the end of each sheet. Finding a tape that was thin and tenacious enough to do the job but that wouldn't tear the paper when removed wasn't an easy task, but we did it. The perfect printer tape is the pink hair-setting tape that's available in any Health and Beauty Aids department.

Dion and Carlos
New York, NY

\$110 Useful boxes—Those soft plastic boxes used to store and mail cassettes have hundreds of other uses. They are perfect for storing resistors and other small electronic parts, as well as nails, screws, small desk items and so on. You can put one in your pocket and carry it anywhere with little fear of it opening up or breaking.

J. Besoin-d'Argent
Paris

\$111 Cassette tip—It is advantageous to leave a space of about 10 counts between programs on your tape. This way, you can add something to any program without having it overwrite the program that follows it on the tape.

A. Lubin
Monsey, NY

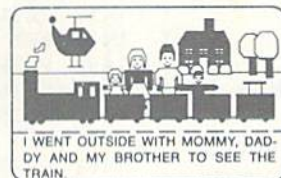


THOUGHTFUL EDUCATIONAL PROGRAMS



C-64 VIC 20 ATARI

CREATIVITY SERIES



MY BOOK Ages: 4 and up

Your child makes his or her own book!

Using only a joystick, your youngster picks objects from the library (princesses, pirates, houses,

vehicles, people, etc.), colors them and arranges them in the picture!

Older youngsters can then type in a story-line or caption, and the page is saved to disk.

Page after page can be saved. But the fun isn't over yet! Your child can PRINT the book on almost any printer capable of producing Commodore graphics!

The first program in BECi's new Creativity Series. Available soon for the Atari.

C-64 DISK: \$34.95

CHILD DEVELOPMENT SERIES

"The goal of Boston Educational Computing is to provide owners of the most elementary computer systems with educational software that can be used easily by those with little knowledge of computing.

"In its Child Development Series, BECi (pronounced Becky) meets this goal."

*Computes!'s Gazette, January 84



ALPHA-BECi Ages: 2 and up

An alphabet program with 26 screens, each featuring a capital and small letter and an object.

"For a child, watching the colorful objects appear on screen is like opening a present."

(VIC-20 only).



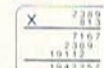
NUMER-BECi Ages: 2 and up

Number identification and color and shape grouping. Five levels and adjustable timing.



ADD/SUB Ages: 5 and up

Addition and subtraction. Up to four digits. Optional objects, carries and borrows, decimal points and hints. Answers entered from right to left, one digit at a time.



MULT-BECi Ages: 7 and up

Multiplication. Up to four digits in multiplier and multiplicand. Answers entered from right to left, one digit at a time.

TAPE: \$19.95 DISK: \$24.95

If ordering directly from BECi, add 5% (or \$2.00 minimum) for shipping.

BOSTON EDUCATIONAL COMPUTING, INC.

Dept. R

78 Dartmouth Street
Boston, MA 02116
(617) 536-5116



Dealer Inquiries Invited



Charge cards and phone orders accepted.

RUN October 1984 / 125

**Jim Butterfield
Previews
Plus/4, C-16**

U.S.A. \$2.95
A CWC/I Publication
November 1984

RUN

The Commodore 64 & VIC-20 Magazine

Packed with Power

**Commodore Explodes
With Two New Micros**

**Over 200
Hardware
Products**

**Manage Your
Data Like
A Pro**

**Bridge the
Compatibility Gap
With a Printer
Interface**





MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Magic

Compiled by Louis F. Sander

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge.

Send your own tricks and requests for a Trick writer's guide to:

MAGIC
c/o Louis F. Sander
P.O. Box 101011
Pittsburgh, PA 15237
U.S.A.

RUN will pay up to \$50 for each original trick we print.

MAGIC's tricks are numbered in hex, the number system of sorcery and computers.

November, also known as turkey month, was named by the ancient Romans, after the Latin *novem*, meaning nine. Since November is the eleventh month, it's obvious that the Romans did *not* have Commodore computers. Whatever this month's name, give thanks that its tricks are far from turkeys.

Starting with a slice of *prosciutto*, they include a tasty taco, some poi, steak-and-kidney pie, and even a Vegemite sandwich. But mainly, there are heavy helpings of tricks for music, modems, joysticks and paddles. *Bon appetit!*

\$112 Automatic line deleter—When you must delete a block of lines from your Basic program, you'd like to have a delete option, but unfortunately this is not available on Commodore computers. The task may be performed by the following one-liner. Be sure to enter it exactly as listed here, because it has some unusual constructions.

```
1 ? "[SHIFT CLR]{3 CRSR DN}"F:"F="F+1":L="L":IF F <= L  
  THEN1{HOME}":POKE198,2:POKE631,13:POKE632,13:END
```

Add the line to your main program, then in Direct mode enter:

```
F=[first line #]:L=[last line #]:GOTO 1
```

For example, F=100:T=150:GOTO1 will delete all lines in the range of 100-150 inclusive. The program runs on the VIC, the C-64 and many PETs.

Carlo Borreo
Imperia, Italy

\$113 Music sources—As we experiment with the musical capabilities of our computers, most of us quickly run out of melodies. Here are some excellent, readily available sources of two- and three-part songs: music textbooks used in fifth- through eighth-grade school classes; music for two or three recorders (The wooden flute-like kind, not a cassette player. Ed.); SAB (soprano, alto, bass) *a capella* choir music.

The music to the songs in these books sounds nice on the computer. The books are easier to work with than most commercial sheet music, because they're written for the proper number of voices.

Elizabeth Oman
Pharr, TX

\$114 Audio hint—If you program late at night, like I do, and you use sound in your programs, you run the risk of disturbing others in the house. The answer to the problem is to use earphones instead of a speaker, and sometimes this is easier than you might think.

On the Commodore monitors, the front and rear panel audio jacks are connected internally, without going through the front/rear input switch. You can plug an 8-ohm headphone into whichever jack you're not using, turn the volume to its lowest position and work to your heart's content. If your headphone doesn't have a plug to fit the monitor jack, and most of them don't, Radio Shack and most electronics stores can sell you an adapter.

Harry Metz
New York, NY

\$115 A nice sound—This one-liner will produce the sound of a silver bell on your C-64.

```
10 S=54272:POKE S+24,15:POKE S+1,110:POKE S+5,9:  
POKE S+6,9:POKE S+4,17:POKE S+4,16
```

Albert H. Coya
Miami, FL

\$116 Better-sounding sound—If your C-64 music is a bit out of rhythm, and if you can do without the screen display while the music is playing, there's an easy way to improve things. Just turn off the screen by adding the following line to your program, before the music starts.

```
POKE 53265,PEEK(53265) AND 239
```

To turn the screen back on, add:

```
POKE 53265,PEEK(53265) OR 16
```

Disabling the screen relieves the computer of having to update it, which is normally done during and between notes. The result is more perfect rhythm, but a side effect is that the music speeds up a bit. If this is bothersome, you can adjust your timing loops accordingly.

Tom Jeffries
Oakland, CA

\$117 Sound filter—Page 88 of *The Commodore 64 User's Guide* shows a neat little program that lets you play songs by entering the appropriate note values into Data statements. If you find that the song contains static or is excessively noisy as each note is played back, try adding the following line after clearing the sound registers.

```
3 POKE 54295,4
```

This activates bit 4 of the resonance filter, which will weed out the noise, leaving you with a clean, pure tone. (If you don't understand the technical terms, put the line in anyway—the computer will know what to do! Ed.)

Lionel Sapkus
Burbank, IL

\$118 Silencer—When creating sound programs on the C-64, it's not uncommon for the sounds to continue, at a low level, after they ought to have finished. To avoid this, just enter POKE 54296,0 after each sound, then enter POKE 54296,15 when you're ready for it to start again. The Pokes turn your computer's volume control from minimum to maximum, respectively.

Dan Schikore
Florissant, MO

\$119 Dulcet tones—Have you been dissatisfied with the poor tonal quality of music programs you've written for your VIC-20? It's impossible to get pitches completely in tune on the VIC, but the key of G major comes closest, so try writing your music in that key. If G major puts you in the wrong range for singing the tune, transpose your music to C major—it next best approximates the well-tempered scale we're accustomed to.

Elizabeth Oman
Pharr, TX

\$11A De-clicker—When working with C-64 sound, are you annoyed by the clicks and thuds when the sounds are turned off? Below is a machine language subroutine that banishes them by gently resetting the SID registers.

Running these lines once gets the machine language into memory, where you can use it as many times as you want. At the end of each sound effect, just call the routine with a SYS 50000, and say good-bye to clicks.

```
1000 FOR X = 50000 TO 50018
1010 READ A : POKE X,A
1020 NEXT X
1030 DATA 169,0,133,253,169,212,133,254
1040 DATA 160,0,152,145,253,200,192,24
1050 DATA 208,249,96
```

Bruce Jaeger
St. Paul, MN

\$11B Commodore 1600 modem tip—If you experience intermittent problems with this modem, try resoldering the pc board where the connector joins it. No stress relief was provided in that area, so after repeated removal, the electrical connection may become loose.

Tom Hoppe
Spokane, WA

\$11C Telephone tip—When you're using a modem, outside sound must not invade the phone line during data transmission. If it does, the modem will hang up, or data will be lost. Unfortunately, the popular *call waiting* telephone service causes this sort of problem when it signals incoming calls.

I've solved the problem by using *call forwarding* whenever I'm on the modem, forwarding all my calls to a time/temperature number or some other harmless destination. Forwarding the call disables the call-waiting tone, giving uninterrupted use of the modem. If you're uncertain about the use of these services on your own line, just ask your telephone company about them.

David W. Martin
Valrico, FL

\$11D Phor phone phreaks—If you want to use a modem, but only have an old-style dial phone, here's a way around the problem. You must have touch-tone service, and you must own the dial phone. Disconnect your phone and remove the screws holding the bottom plate to the base. Trace the wires from the receiver cord to the bus bar in the base. Cut off one end of the modular extension cord you purchased, strip the four wires and match the colored wires to the wires on the bus bar coming from the receiver. Reassemble the phone.

Donald J. Ennis
Louisville, KY

\$11E More phor phone phreaks—With more than one phone on a line, family members can unknowingly pick up extensions while you're using your modem, causing undesirable errors. To avoid this problem, you can make your computer phone, or modem, the priority station.

In most cases, the wire feeding your computer phone has

four conductors, but only the red and green are active. Without disconnecting them from your phone, wire these two through a double-pole switch, and back to the two extra conductors (usually yellow and black). This will take the dial tone back through the wires to the entrance bridge, the connecting block where the phone wire enters the house. At the bridge, remove all wires going to telephones, except the two going to the computer phone. Then hook the disconnected wires to the yellow and black wires coming from your switch. If your extension phones won't break the dial tone after this is done, simply reverse the yellow and black wires.

Now you can use your switch to disconnect all extensions while you're using your modem.

Gerald Evans
Westminster, MD

\$11F Joystick joy—If you already own an Atari 2600 game system, and who doesn't, there is no need to buy joysticks for your Commodore. The Atari units will work perfectly.

Paul Goble
Mustang, OK

\$120 Joystick sorrow—Joysticks can cause problems on the C-64. If the joystick is moved or the button is pressed, it can cause the keyboard to act erratically, printing different letters than the keys that are pressed. Always make certain your joysticks are unplugged or undisturbed when not in use.

Matt Bassen
Federal Way, WA

\$121 Joystick sorrow undone—When you write a C-64 program that uses both a joystick and limited character inputs, using the Get statement is a good way to read the keyboard. But the Get statement may incorrectly read the joystick as a character input. You can avoid this problem by using joystick port 2, or by properly choosing the characters to which your program responds. For example, {CRSR RT}, {space}, left arrow, * and 2 are characters commonly read from the joystick in port 1. Avoid using these characters and you'll have avoided a problem.

John Mirabella
Vienna, VA

\$122 C-64 joystick button—You can use the joystick to continue the flow of a program, by waiting for the button to be pressed. WAIT 56465,16,16 will work with port 1, while WAIT 56464,16,16 will work with port 2. The following simple program illustrates the principle.

```
10 PRINT "PRESS FIRE BUTTON ON PORT 2"
20 WAIT 56464,16,16
30 PRINT "BANG!"
40 GOTO 20
```

David Covarrubias
Thousand Oaks, CA

(continued on p. 164)

Magic (from p. 12)

\$123 Joystick sorrow, VIC version—On the VIC, if a Datasette key is depressed, it can disrupt operation of the joystick. So always press the Datasette's stop key if you're working with a joystick.

Bosco Tsang
Windsor, Ontario
Canada

\$124 VIC joystick reader—This one-liner will read the VIC joystick port.

```
10 POKE 37154,127 : X=(NOT PEEK(37151)) AND 60-(PEEK  
(37152) AND 128)=0 : PRINT X : GOTO 10
```

Pushing the joystick in the following directions will return the indicated values of X:

North	4	Northeast	5
South	8	Northwest	20
West	16	Southeast	9
East	1	Southwest	24

When the joystick is centered, X=0. Pressing the fire button will return a value of 32 plus the value for the joystick direction. To have the computer wait for the user to press the fire button, use the following.

```
20 PRINT "PRESS THE BUTTON TO CONTINUE"  
30 WAIT 37137,32 : WAIT 37137,32,32  
40 Continue the program here.
```

Tony Giordano
Brooklyn, NY

\$125 VIC paddles—Use the paddles, it's easy! Just Peek (36872) for paddle X and Peek (36873) for paddle Y. That's all it takes to read them—very easy, compared to the joystick.

Unknown Magician
Unknown Address

\$126 VIC paddle program—Plug a paddle into the VIC's control port, turn up the sound, run this program and twiddle the paddles.

```
1 X=PEEK(36872) : POKE 36876,X : POKE 36878,X : POKE  
36879,X : PRINT "{SHIFT CLR}" X : GOTO 1
```

John Hartenstein
Philadelphia, PA

\$127 Paddle Wait statements—In other tricks, we've shown how the Wait statement can be used to stop program execution until a certain key is pressed. To wait for the paddle buttons, use the following.

WAIT 56321,4,4	(C-64, Port 1, X)
WAIT 56321,8,8	(C-64, Port 1, Y)
WAIT 56320,4,4	(C-64, Port 2, X)
WAIT 56320,8,8	(C-64, Port 2, Y)
WAIT 37137,144,16	(VIC, X)
WAIT 37152,128,128	(VIC, Y)

Grant A. Dibert, III
Ft. Thomas, KY

\$128 Power supply tip—The Commodore power supply is very sensitive to overheating, and needs a good flow of air around and through it to keep it cool.

Although the unit is shipped with a long cord, and the literature says to keep it a far distance from the cassette drive, computer and monitor, *never* put the power supply on the floor, especially a carpeted one. The unit will sink into the pile of a rug or carpet, blocking the cooling vents on the bottom. Even hardwood floors are dusty, and a dust-clogged power supply is a candidate for failure. Do yourself a favor and put the power supply up on a table where you can see it, and periodically dust it and check for clogged vents.

Joseph A. Levine
Lynchburg, VA

\$129 Magical power switch—Tired of plugging and unplugging your power supply every time you use it? Just get an in-the-cord switch of the type used for table lamps, and wire it into your power supply. Most of the switches are made by Leviton, and are available in hardware and lighting stores. They're very easy to install, and they make life a *lot* easier.

Steven D. Jackson
Caldwell, ID

\$12A A constant source of power—If you experience the frustration of having your power cord fall out right after you've typed in 500 lines of code, try this tip. Glue your power cord into the power connector with clear silicone rubber. It won't change the appearance of your machine, and the rubber can be easily removed if necessary in the future.

Tom Hoppe
Spokane, WA

\$12B Power box—Every computer owner should use a multiple-outlet power box, of the type that has a single switch controlling all the sockets. In spite of what you may read in the manuals about turning on certain pieces of equipment before others, using a power box almost never causes any trouble.

Consider the advantages: All your equipment is powered from a single wall socket; you can turn everything on or off with one switch; every power cord is run to the same place; often these boxes include a protective circuit breaker. All in all, the power outlet box is one of the most useful computer accessories you can have. Ask for one for Christmas.

Ed Moore
Portland, ME

\$12C Improved TV video on the C-64—If you're using a color TV rather than a monitor, you can improve your picture by making up a special plug for the monitor's audio/video connector. (That's *not* the one you plug your TV into.) Referring to Appendix I in your user's guide, connect a 150-ohm resistor between the luminance and video-out pins, and the results might amaze you.

Be careful, because the DIN plug's pins aren't numbered

as you might expect. The picture in the book shows the solder-lug end of the male connector, and the pins you want are the two on the right.

L.F.S.

\$12D Pen pals—Being overseas has its good and bad points. The good is access to both British and American software for my C-64, and the bad is not having access to many Commodore stores.

Regardless, I've devised a way to keep in touch with my home in the States. I hook my C-64 to my video cassette recorder, then type a video letter to my friend in New Jersey, demonstrating the latest game from the British press or whatever strikes my fancy.

When he's been thoroughly amazed by British ingenuity, my friend rerecords the tape with American TV programs and mails it back. Then I can see what is happening in the States, watch 60 Minutes or a movie from HBO.

Bill Murray
Alconbury, England

\$12E Connector hint—There are two points of caution when making up cables with DIN connectors.

First, the standard DIN pin numbers are not what you might imagine. Depending on the number of pins in the connector, for example, pin 1 may or may not be next to pin 2. The situation is so confusing that even published diagrams are sometimes incorrect. (The ones in Commodore publications are all right. Look closely at them to see what we're talking about.)

The second confusing point is that published pinouts often don't say which end of which sex connector they are illustrating, so it's again unclear which pin is which. The Commodore manuals illustrate the solder terminal end of the male connector.

Tiny pin numbers are always molded into the insulator, so if your eyes are good and if you're careful, you shouldn't have any trouble.

L.F.S.

\$12F Expansion port connectors—Anyone skilled enough to make his own cables can easily make his own expansion port connectors. Radio Shack sells blank printed-circuit boards and all the equipment you need to etch your own, including the artwork for the male connector pins. It's easy and a lot of fun to make your own connectors in this way.

Clay Collins
Honolulu, HI

\$130 More expansion port connectors—I have built circuits for the expansion port using Vector 3662DP plugboards. These are blank boards with 0.1-inch spacing and 22 gold-plated contacts on each side. The cost is about \$10. However, the numbers and letters used by Commodore on the expansion port are the reverse of industry standards (pin 1 standard is pin 22 on the expansion port, etc.), and this must be noted when wiring the connector.

Thomas Maggio
Rome, NY

\$131 Safety tip—My cat jumped onto the computer table, knocking the braid from the Datassette connector inside one of the rear ports, where it did a lot of electrical damage. To prevent such accidents in the future, I made covers for all the ports by folding pieces of duct tape nearly in half, lengthwise. I used the remaining sticky part to fasten the covers to the rear of my computer, where they can be lifted up when access is required. My covers keep paperclips, cable braid, dust and other unwelcome items outside the computer, where they belong.

Lorraine Richards-May
Leesburg, IN

Editor's note: Those Datassette braids are much more trouble than they're worth. Since they are only used with Commodore PETs, many VIC and C-64 owners just cut them off and discard them.

\$132 SX-64 printer-interface hint—Some C-64 add-on devices, notably Cardco printer interfaces, pick up their power by plugging into the cassette port on the rear of the computer. Because the SX-64 portable computer doesn't have a cassette port, it's not possible to use a standard Cardco cable with it. We solved this problem by cutting off the connector that goes from the interface to the cassette port. We then obtained a 9-pin subminiature D connector and soldered the former cassette port wire onto pin 7. Now we can plug the connector into one of the game ports, and the interface picks up its power from there. Our printer (Epson MX-80) runs fine, and the other game port is free so we can still use a joystick with programs like Commodore's Magic Desk.

Kris & Steve Coon
Honeoye, NY

\$133 One-line flasher—This program makes any TV set or color monitor flash like a strobe light. The strobe time can be changed by changing the number in the timing loop, and the program can flash in any desired color by changing the number of the color in the second Poke. The following program is for the VIC.

1 A = 36879:POKEA,8:FOR T=1 TO 99:NEXT:POKEA,25:GOTO 1

This line is for the C-64:

1 A = 53280:B = A + 1:POKEA,0:POKEB,0:FOR T=1 TO 99:NEXT:
POKEA,1:POKEB,1:GOTO 1

Luis Enrique Grijalva Raudales
Tijuana, Mexico

\$134 Keyboard tip—With all the keys on the Commodore keyboard, it's easy for your fingers to miss the home keys for touch typing. If you put drops of glue on the F and J keys, you'll be able to feel them when your hands are positioned correctly. Choose a type of glue that will make a substantial bump, but one that can be scraped off later, if needed.

James Bartlett
Summerville, GA

\$135 Printer trick—Because I am working with the monitor and machine language, I wrote this triple-

loop program to make a one-page hex and decimal conversion chart. If you start the chart at the very top of a page, it just fills the sheet. The program works perfectly with my Commodore 4022 tractor printer and should work the same with others.

```
1 OPEN4,4:CMD4:FORI=0TO63:FORJ=ITO255STEP64:D$=STRS
(J):PRINTJSPC(5-LEN(D$))
2 H=J/16:FORK=1TO2:H%=H:H$=CHR$(48+H%-(H%>9)*7)
:PRINTH$;H=16*(H-H%)
3 NEXT:PRINTSPC(12);NEXT:PRINT:NEXT:PRINT#4:CLOSE4
```

G. Sturdivant
Address Unknown

\$136 Cassette tape index—When saving the first program on a new cassette, consider reserving space for a tape index, which you can record at the start of the tape after it is full. Ten numbers on the tape counter should be enough to hold a very large index, especially if it's a simple one. My indexes are disguised as Basic programs, with the line numbers corresponding to tape-counter settings, and with the program names typed in as Basic text. The following example will save, load and list perfectly, but of course it can't be run.

```
0 INDEX
10 PROGRAM #1
20 PROGRAM #2
45 PROGRAM #3
55 Etc., etc.
90 END OF LAST PROGRAM
```

Ken Wills
Pittsburgh, PA

\$137 Saving data—For those who've never saved anything but programs on their Datassette, here's a little program that illustrates the saving of data.

```
10 PRINT"({SHIFT CLR} INPUT DATA";POKE631,34:POKE198,1:
INPUTD$:PRINTD$
20 OPEN1,1,1,"DATA":PRINT#1,CHR$(34)+D$:CLOSE1
30 PRINT"({SHIFT CLR} REWIND TAPE, THEN PRESS A KEY."
40 GET A$:IF A$=""THEN 40
50 OPEN1,1,0,"DATA":INPUT#1,D$:PRINTD$
```

The Pokes in line 10 put a quotation mark as the first character in D\$, allowing it to contain commas, colons and so on. When the quotation mark is read back, it places the computer in Quote mode, so all the characters will be printed as they were typed.

Kenneth E. Stringham, Jr.
Attleboro, MA

\$138 C-64 Save disable—You can disable the C-64's Save command with POKE 818,32. To enable it again, enter POKE 818,237.

Damien Nelson
Melbourne, Australia

\$139 Using abbreviations—When keyword abbreviations are used in long program lines, the lines can list longer than the usual 80 columns. (Prove it by entering 10?:?:?, etc., running the question marks to a point just short of the 80th column. Then list the line—it should take up almost six screen lines.)

The long lines cannot be edited, which is annoying when

they have to be changed in some way. To avoid retyping in this circumstance, make a dummy line, numbering it so it will never be executed. After its line number, make the first character a quotation mark. The rest of this line should be your regular program line, including all its abbreviations.

When you need to edit your regular long line, just list the dummy, edit the line number, delete the leading quotation mark, edit the rest of the line, then hit the return key. Your dummy remains if you need it again, but your newly edited line replaces the one you couldn't edit before, with a saving of many keystrokes. You can delete the dummy when your program achieves its final form.

Lion L. Kuntz
San Francisco, CA

\$13A Easier debugging—When debugging, you often need to return repeatedly to certain sections of the program. To get there much faster, you can insert lines like the following at the beginning of your program.

```
0 GOTO20
1 LIST 100-200
2 LIST 450-550
3 OPEN 3,4:CMD3:LIST 400-430
4 etc.
20 REM END OF DEBUG
```

The line numbers to list are only examples; you'll want to use whatever line numbers are most appropriate for the program being debugged. To use the routine, just type in RUN 1 to list lines 100-200, RUN 2 to list lines 450-550, RUN 3 to list to the printer and so on. Since executing the List command terminates program execution, you don't have to put End or Stop commands in each line. An alternate routine is this:

```
0 GET A$:IF A$=""THEN0
1 IFA$="A"THEN LIST 100-200
2 IFA$="B"THEN LIST 450-550
3 IFA$="C"THEN OPEN3,4:CMD3:LIST 400-430
20 REM END OF DEBUG
```

Here, you just run the program, then press a key for the listing you want. Typing an unused letter will execute the program normally. I've used both forms of this trick with great success.

Mike Rogalski
Monrovia, CA

\$13B Variable names—If you run this:

```
10 TOP=65
20 BOTTOM=90
30 PRINT BOTTOM-TOP
```

you will get a Syntax error, because TO, a Basic keyword, is embedded in each of the variable names. You can trick the computer by placing a graphics character inside the keyword. Try this:

```
10 T{shift J}OP=65
20 BOTT{shift J}OM=90
30 PRINT BOTT{shift J}OM-T{shift J}OP
```

The program will run perfectly, giving an answer of 25. When you list the program, you won't see the shifted characters at all, but they're in there just the same.

Nick Proakis, Jr.
Aliquippa, PA



MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Magic

Compiled by Louis F. Sander

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge.

Send your own tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237
U.S.A.

If you send a self-addressed stamped envelope to the above address, you'll receive a Trick Writer's Guide.

RUN will pay up to \$50 for each original trick we print.

MAGIC's tricks are numbered in hex, the number system of sorcery and computers.

The Commodore 64 & VIC-20 Magazine

Program of the Month—
Print Your Screen

U.S.A. \$2.95
Canada \$3.50
A CWC/I Publication
December 1984

RUN

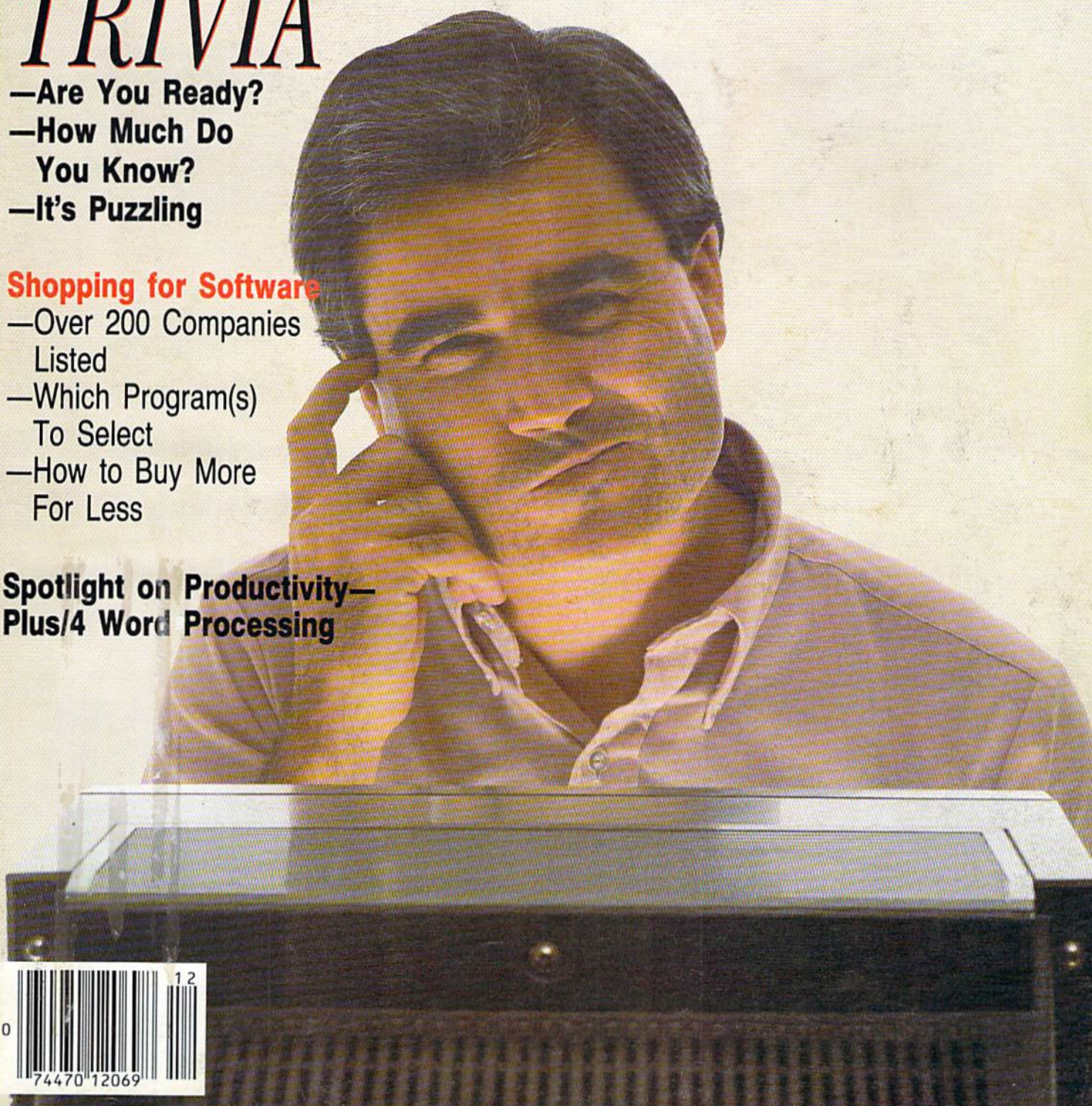
TRIVIA

- Are You Ready?
- How Much Do You Know?
- It's Puzzling

Shopping for Software

- Over 200 Companies Listed
- Which Program(s) To Select
- How to Buy More For Less

Spotlight on Productivity— Plus/4 Word Processing



This month's bag holds a dozen printer tricks, plus baker's dozens more on Basic statements and commands. Given our powers of prescience, we *know* you'll like them.

Our staff of Magical Beings is working double overtime, materializing copy for next month's special *RUN*. It's Issue 13, a number with special significance in our realm. And it's really a work of magic, featuring every one of 1984's tricks, plus hundreds of new ones, all indexed for easy reference—a useful collector's item if ever you've seen one.

On a more timely note, Trondheim, our Typesetting Troll, visited her cousin at the North Pole last week, and you wouldn't believe what she saw. Santa, long a Commodore and *RUN* fanatic, has *tremendous* things in store for our readers. He knows every name on *RUN*'s mailing list, and come Christmas Eve, he's vowed to bless his kindred spirits. We've promised not to tell who's getting what, but the size-60 stockings won't hold the hardware that some of you are about to receive. And software! Two major disk houses have been sending all their production Santawards since July! Santa's copy shop, in Singapore (the North Pole's a *lousy* magnetic environment), is cranking out unprotected software at a rate you wouldn't believe. All in all, Christmas morning should be the biggest computer event since Babbage was in baby clothes.

But enough of the news from the Northland; it's time to start computing. Before you try the tricks, take time for our holiday wish: Peace on Earth, good will to men. And from all the folks at Magic, to our readers around the world—Merry CHR\$(ISTMAS) and Happy New Gear!

\$13D Printer switches—When you set up a non-Commodore printer to work with your Commodore system, two things are important. First, your interface must allow full emulation of all the Commodore printer commands; most of the available interfaces do this with no problem. Second, the little DIP switches on the interface and on the printer must be properly set.

The interface switches are often properly set at the factory and are usually well covered in the documentation. The printer switches, however, often are *not* set properly for your Commodore, since most printers are made to function with a more industry-standard type of interface. The printer manual usually tells all about the DIP switches and their function, but the information may be hard to dig out. Just persevere, and everything will work out in the end.

Tom Rohrer
Dimondale, MI

\$13E What are DIP switches?—Most printers and interfaces, as well as many other computer peripherals, have a group of DIP switches to configure them for different types of operation. These are tiny switches, often seen in groups of eight or so, that must be set with a pen-point, paperclip or other small instrument. Usually their settings determine the behavior of the device when power is applied—in the case of a printer, one of the DIP switches may determine the number of characters per inch, and another may determine whether or not the printer requires a separate linefeed character to advance the paper.

The various switch settings are always covered in the manual, but the brief descriptions can be cryptic to the newcomer. Often, the parameters that the DIP switches

control can be changed later under software control, say by sending a special control character to the printer.

People often wonder why they're called DIP switches. It's because they are made with the same pin size and spacing as IC chips—they'll fit perfectly into standard IC sockets. The standard IC pin scheme, a dual line of precisely spaced connections, has a name. It's called the Dual In-line Package, or DIP. Since the switches are made to the same measurements, they've taken on the name.

Matthew A. Henson
Maryland

\$13F Printer paper holder—You can have a very attractive and efficient paper feeder for your printer by buying a plastic in/out basket from an office supply store. Simply put its opening towards the back of your desk and set your printer on top of the basket. Put your fanfold paper in the basket and feed it up to the printer. The paper will unfold itself, page by page, as the printer needs it. I bought my basket in a smoke color, which matches my printer's dust cover.

Ron Reynolds
Sylvania, OH

\$140 Paper jam hint—When your printer paper jams, spray some silicone or teflon lubricant in the paper-feed pathway, then slide some paper through to clean off the excess. It will help your paper feed smoothly without binding.

Tom Hoppe
Spokane, WA

\$141 Tearing printer paper—When I try to tear the paper off my printer, sometimes I get a sloppy edge, or even half a sheet of paper, crudely ripped down the middle. To solve the problem, I took the metal cutter off a box of aluminum foil, leaving some of the cardboard attached, and glued it to the back cover of my printer. It gives me a neatly torn edge every time.

Signature illegible
ZIP code 14864

\$142 Extending ribbon life—Printers like the Commodore 1525 use a ribbon cartridge that inks itself as it goes. If you print a lot of graphics or reverse field characters, the inking process can fall behind, leaving you with very light print. The following program runs your ribbon continuously without printing anything; after five minutes or so of this activity, your ribbon should be thoroughly inked. If you do this from time to time, the ink may last as long as the ribbon.

```
1 OPEN 4,4
2 PRINT#4,CHR$(15)"[38 spaces]";
3 PRINT#4,CHR$(15)"[38 spaces]"CHR$(8) : GOTO 2
```

Donald H. Butler
Waterford, PA

\$143 Ribbon reinking—Some of you have recommended reinking printer ribbons as a money-saving measure, but it could ruin your printhead. Many stamp pad inks contain microscopic abrasive particles that can cause more damage than I like to think about. You should use ink

that is made *only* for a dot-matrix head; this type has a lubricant in it to reduce wear.

Joseph H. Walters
Bellflower, MO

\$144 Easy printer listings—I use this routine at the end of any long program I'm working on. It lets me do a hardcopy listing just by typing RUN10000. When the listing is finished, I just press the return key to disable the printer.

```
10000 PRINT "[SHIFT CLR][CRSR DN]PRINT#:CLOSE[CRSR UP]"
10010 OPEN4,4:CMD4:LIST
```

Charles Christensen
Aurora, IL

\$145 Printer listing hint—If you're having problems getting your non-Commodore printer to produce the reverse field heart symbol and other cursor control graphics, there is an alternative. Instead of using those graphics in your program, use their CHR\$ codes instead. The code for Clear Screen is CHR\$(147), and no printer will have difficulty duplicating it in a listing.

Paul West
Portland, OR

\$146 RS-232 printer tips—Most printers that use Commodore's built-in RS-232 interface work fine for program listings, but using them in a program is a different story—they don't work well unless you follow a few guidelines.

First, if CLR is used in the program, it should be used before the printer channel is open; unfortunately, CLR closes the printer channel, and trying to access the printer will give a Device Not Present error.

Second, the first line of your program (or after the CLR) should open the RS-232 port to include the baud rate. This information should be found in your printer manual.

Third, don't close the printer channel until you want to end the program.

Chris Poole
Niceville, FL

\$147 Working with CHR\$ codes—Any CHR\$ code, or any combination of codes, can be assigned to an ordinary string variable. Doing this often makes it much easier to use the codes in programs. For example:

```
100 CS$ = CHR$(147) : REM CLEAR SCREEN
200 PRINT CS$ "HELLO"
```

The string-based codes can also be sent to any peripheral device, for example:

```
400 SO$ = CHR$(14) : SI$ = CHR$(15) : CR$ = CHR$(13)
410 OPEN 4,4
420 PRINT#4,SO$+"DOUBLE WIDTH PRINTING"
430 PRINT#4,SI$+"NORMAL PRINTING"
440 PRINT#4,CR$
```

They can also be used together:

```
500 ES$ = CHR$(27) : AS$ = CHR$(0) : BS$ = CHR$(1)
510 PRINT#4,ES$+"W"BS$+"DOUBLE WIDTH"
520 PRINT#4,ES$+"W"AS$+"NORMAL WIDTH"
```

And they can be concatenated:

```
600 DW$ = ES$ + "W" + BS : NO$ = ES$ + "W" + AS
610 PRINT#4,DW$+"DOUBLE WIDTH"
620 PRINT#4,NO$+"NORMAL PRINTING"
```

These CHR\$ codes and combinations are given as examples, and might not work on your printer. The technique, however, will work with all combinations and peripheral devices, as well as on the computer alone.

Allen Ross Brier
Houston, TX

\$148 For...Next hint—When breaking out of a For...Next loop before it is completed, you should terminate the loop by setting the index variable to its highest value, then branching to a Next statement. Failure to do this can cause problems such as unexpected Out of Memory errors. Here's a short program demonstrating the technique:

```
100 DIM A(100) : A(50) = 2
110 FOR X = 1 TO 100
120 IF A(X) > 0 THEN PRINT X,A(X) : X = 100
130 NEXT
140 PRINT "FINISHED"
```

John Belmonte
Chicago, IL

\$149 VIC and the 1526 printer—The 1526 often hangs up in mysterious ways when used with the VIC. To cure the problem, enter SYS 64490, which changes the timing on the serial port to match that of the C-64. Without the SYS call, the VIC sometimes fails to recognize the presence of the printer, hence the Device Not Present message.

Howard M. Mesick
Hartley, DE

\$14A Dynamic keyboard explained—It's easy to make a program simulate keypresses, with truly magical effect. The technique has been around since at least 1978, and it's commonly called *dynamic keyboard*. The basic idea is to have your program Poke the CHR\$ values of one or more characters into the keyboard buffer area of memory. When the program is finished, the computer will print the Ready prompt, then respond as though you've typed the Poked characters.

The keyboard buffer occupies the ten memory locations from 631–640 decimal. It works in conjunction with location 198, which must always hold a count of the characters Poked into the buffer. Run the following little program to see the principle in action.

```
10 FOR I = 1 TO 10 : POKE 630 + I,65 : NEXT : POKE 198,10
```

You should get the Ready prompt, followed by a series of ten A's (CHR\$(65) is A). Change the 65 to 64+I, and you'll get the first ten characters of the alphabet. Change the 10s to smaller numbers, and you'll get fewer letters.

Dynamic keyboard's *real* magic comes when your program prints an executable statement on the screen, then makes the Ready prompt appear on the line above it, so the cursor ends up on the executable line. If the buffer holds a 13, it's just like putting the cursor on that statement and hitting the return key; your computer will do whatever the statement tells it to do.

Continued on p. 188

Magic

From p. 12

Clever programmers can print up to *ten* Direct mode lines, with proper spacing between them, then put CHR\$(13)'s into the buffer, causing all those lines to be executed. The key to success is careful placement of the screen commands and careful positioning of the cursor at the moment the program ends.

Several of this month's tricks incorporate the dynamic keyboard technique. Now that we've explained it, try to figure out how they work.

Fobert E. Peary
Cresson, PA

\$14B List Magic—If you execute the List command from within a program, the listing will take place, but program execution will stop. You can use the following routine to Poke the word RUN into the keyboard buffer, and to execute the run as soon as the list is finished.

```
10 FOR I=631 TO 634 : READ A : POKE I,A : NEXT I : POKE 198,4
20 DATA 82, 85, 78, 13
30 LIST
```

Craig Lewis
Address unknown

\$14C Good listing from bad lines—Did you ever get a Syntax error without finding an error in the indicated line? Not all keyboard entries show up when you list your program, and the secret to debugging success may be to reenter the suspected line. For example, enter the following program, purposely misspelling PRINT by inserting a shifted Q between the I and the N:

```
100 PRI[shift Q]NT "DOUG HENNING"
```

When you try to run the program, you'll get a Syntax error. List the program to find the error, and you won't be able to see it. Surprised? The shifted Q didn't show up at all! To fix this problem, retype your line. To fix it with less effort, move your cursor up to the listed line, then press the return key.

L.A. Gerig
Monroeville, IN

\$14D C-64 slow lister—You can slow the listing on a C-64 by entering:

```
POKE 56324,28 : POKE 56325,0
```

When you ask for a listing, the computer may seem to stall for a moment, but give it time and it'll start a very slow list. To make things even slower, press the CTRL key or Poke a lower number into 56324. To return the computer to its normal mode, press the stop and restore keys simultaneously.

Thomas J. Tennant
Louisville, KY

\$14E Loading from within a program—It's often desirable to split programs into two parts, usually to save space in memory. You can load program #2 by execut-

ing the Load command from within program #1, but you must take some precautions. When one program loads another, the second program *must* be shorter than the first. (You can use the FRE function to compare the programs' lengths.) Some side effects of this process are that the second program is executed automatically after it's loaded, and any variables used in program #1 retain their values when program #2 is executed.

If you're loading from tape, you can get around the program length restriction and avoid both side effects, by putting the following line at the start of program #2.

```
0 POKE 45,PEEK(174) : POKE 46,PEEK(175) : CLR
```

If you modify a program to which this line has been added, you *must* remove the line before executing the modified program. Failing to do that will cause an unrecoverable disaster.

Anne Phillips
New Denver, B.C.
Canada

\$14F Dynamic keyboard loads—When loading one program from another, you can avoid the length restrictions and side effects of Program mode loads by using this:

```
5000 PRINT "LOADING [3 CRSR DNs]"
5010 PRINT "LOAD"CHR$(34)"programname"CHR$(34)"[3
      CRSR UPs]"
5020 POKE 631,13 : POKE 632,82 : POKE 633,85 : POKE 634,78 :
      POKE 635,13 : POKE 198,5 : END
```

When executed, this will act as if you typed the Load command on the keyboard and then typed RUN when it was complete. If you use tape rather than disk, replace the 8 in line 5010 with a 1.

P.R.D.
Hales Corners, Wisconsin

\$150 Easiest Program mode load—If you are using a Datasette, the easiest way to load and run one program from another is this:

```
100 POKE 631,131 : POKE 198,1
```

It has the same effect as pressing the shifted run/stop key.

Craig Lewis
Address Unknown

\$151 Easy load and save—If you're copying a program from one disk to another, you first load it by entering LOAD"programname",8. When the time comes to save it again, just type SAVE over the former LOAD, then hit the return key. It saves your having to retype the program name and drive number. To save even more, use L [shift O] as an abbreviation for the Load command, and S [shift A] as an abbreviation for the Save command.

Walter Dickerson
Brick, NJ

\$152 Multiple saves—You can make multiple copies of a program by putting the Save command in a For...Next loop, such as

```
FOR I=1 TO 3 : SAVE "HARRY ALBACKER" : NEXT
```


You can even number each copy:

```
FOR I=1 TO 4: SAVE "THE GREAT CARSONI"+STR$(I): NEXT
```

David C. O'Sada
Jacksonville, FL

\$153 Multiple verify—The Verify command works nicely in a For...Next loop, too. If the verification fails, the loop will abort with an error message.

James M. Byrne
York Harbor, ME

\$154 Keyword abbreviation tip—Proof-reading Basic lines that contain keyword abbreviations is easier if the computer is in Upper-Lowercase mode. In this mode, abbreviations don't contain graphics characters and are much easier to read. Poke is pO, Next is nE and so on. You can put your machine into this mode by simultaneously pressing the shift and Commodore keys.

Maurice A. Gage
Westchester, CA

\$155 Input hint—Quotation marks can help you input strings you didn't think were possible to input. By typing quotes before and after your input, you can add leading and trailing blanks that would normally be truncated. You can also input commas (no more Extra Ignored!), colons, cursor controls and so on. To input a delete character any time after your initial quote, just type "[CRSR LF][insert][delete]." The best part is that the quote marks will not be included in the string, (for example, "MAGIC" has five characters in the string, not seven).

Richard Shine
Carrollton, TX

\$156 More on Input statements with quotes—You can use the dynamic keyboard technique to put leading quotation marks on your response to the Input statement. For example:

```
100 PRINT "WHAT MAGIC CHARMS";  
110 POKE 631,34: POKE 198,1  
120 INPUT CS
```

34 is ASCII for the quotation mark, and the Pokes make the computer think you've typed it. Now the computer will accept any key except the return and delete keys.

Errol Lisonbee
Salt Lake City, UT

\$157 Input prompts—When using the Input statement, don't use prompts longer than 38 characters (on the C-64) or 20 characters (on the VIC). Due to a bug in the ROM (Read Only Memory), longer prompts will result in bad reads or an error message. Reports say the bug has been fixed in the SX-64 portable computer.

Michael L. Bumbaugh
Lima, OH

\$158 Interesting Input prompt—To get an unusual flashing prompt, try this:

```
10 INPUT "[2 spaces][COMD B][3 CRSR LF]";AS
```

For variety, try substituting different graphics for the

COMD B. To ensure you don't get the graphics symbol itself, as AS\$, you can add this to the end of line 10:

```
:ON (AS=" [COMD B]")+2 GOTO 10,20
```

Then put your program continuation at line 20.

Brooks Hunt
Alexandria, VA

\$159 Another queryless input—There's another method of eliminating the question mark when getting input from the keyboard. The secret is the little-known fact that the keyboard has a device number of 0, and that any piece of hardware with a device number can have an input channel opened to it. To see what this means, try the short program below.

```
10 OPEN 1,0  
20 PRINT "TYPE SOMETHING ";  
30 INPUT #1,AS  
40 PRINT  
50 CLOSE 1  
60 PRINT "YOU TYPED: "AS
```

Line 10 opens an input channel to the keyboard. Line 30 gets the user's input. Line 40 is necessary to move the cursor to the next line and line 50 closes the channel. You get no question mark with this method, but you must carefully control the cursor position.

Michael Scharland
Steger, IL

\$15A Slick Get trick—Here's a way to use the character received with a Get statement as the first character for an Input statement. The technique follows the THEN in line 110 below. In the example, if you continually press the space bar, a sequence of numbers is printed. If you input a number in place of the space, that number is printed instead. The example is useless, but the technique has lots of possibilities.

```
100 GET AS: IF AS = " " THEN 100  
110 IF AS <> "[space]" THEN POKE 631,ASC(AS): POKE 198,1:  
INPUT B  
120 PRINT B: B=B+1: GOTO 100
```

Ron Ahern
San Diego, CA

\$15B Multiple-choice Get—The following short routine lets you detect keypresses, from a specified group of keys, and directs the program according to the detected keypress.

```
10 GET AS: J=1: FOR I=1 TO 4: IF AS=MID$("ABCD",I,1)  
THEN J=I+1  
20 NEXT: ON J GOTO 10,aaa,bbb,ccc,ddd
```

In the example, aaa, bbb, ccc, ddd are the statement numbers you want the program to go to if A, B, C or D are pressed. The string in the MID\$ expression can be as long as you'd like, and can even include function key codes. Try it!

Jason Dorn
Saratoga Springs, NY

\$15C Using Get instead of Input—Here's a way to get rid of the question mark while getting input from the keyboard.

5 BS = ""

```
10 POKE 207,0 : POKE 204,0 : GET AS : IF AS = "" THEN 10
20 IF AS = CHR$(13) THEN PRINT CHR$(32) : GOTO 40
30 PRINT AS : BS = BS + AS : GOTO 10
40 REM THE INPUT IS STORED AS BS
```

It's necessary to print CHR\$(32), which is a space, to obliterate the cursor in case it is on when you press the return key.

N.S. Hanspal
King of Prussia, PA

\$15D Using the Get statement—A good programmer will write this:

```
10 PRINT "PRESS ANY KEY TO CONTINUE"
20 GET AS : IF AS = "" THEN 20
```

A better programmer will empty the keyboard buffer first, so that any previous keystrokes are ignored:

```
10 PRINT "PRESS ANY KEY TO CONTINUE"
15 GET AS : IF AS < > "" THEN 15
20 GET AS : IF AS = "" THEN 20
```

An alternate way to empty the buffer is:

```
15 POKE 198,0
```

John R. Olsen, Jr.
Newberg, OR

\$15E Get tip—Here's a Get routine that avoids a possible Type Mismatch crash when using numerical values:

```
10 PRINT "CHOOSE A NUMBER 1-5";
20 GET AS : IF AS = "" THEN 20
30 A = VAL(AS) : IF A < 1 OR A > 5 THEN 20
40 PRINT A
```

Line 20 inputs the data as a string value to avoid the Type Mismatch crash if an alphabetic key is pressed. Line 30 converts the data to numeric form and checks whether it's in the right range (1 to 5 in the example). The routine won't crash, accepts only the numbers you specify, and it does not require you to press the return key.

John Blanford
Ventura, CA

\$15F Cursor for Get—A disadvantage of the Get statement is that it provides no flashing cursor to prompt the user for input. Here's a way to provide a cursor:

```
10 POKE 204,0
20 GET AS : POKE 207,0 : IF AS = "" THEN 20
30 POKE 204,1 : PRINT AS
```

The Poke statements in lines 10 and 20 tell the computer to turn on the cursor while it is waiting for a key to be pressed. Line 30 turns off the cursor and prints the value of AS. Be sure to print something at this step, even if it's just a space, or an image of the cursor might be left on the screen.

David Palmer
Address Unknown

\$160 Data error finder—If you get an Illegal Quantity error while reading Data statements, the following Direct mode entry will show you the line number of the offending data item.

```
PRINT PEEK(63) + 256*PEEK(64)
```

Don Criss
Fairmont, WV

\$161 Data statement debugger—I use this on those occasions when I suspect my Read statements are out of step with their intended Data statements:

```
50 READ A : PRINT A, PEEK(63) + 256*PEEK(64)
```

It prints both the data item and the number of the line it was read from. Just insert the Print statement after the appropriate Read statement in your program, and delete it after debugging is complete. Of course, you must make the variable in the Print statement the same as that in your Read statement.

Ben Cherry
Elmira, MI

\$162 Handling long Data items—If your data items are long strings, sometimes some of them won't fit on a single program line. For instance, long questions in a quiz program may need three or four lines. To overcome this, find how many lines the longest item will take, and break it into that number of substatements. Then read and print it as several concatenated string variables. Be sure to insert null strings when necessary for shorter Data statements that don't use the extra lines.

Carolyn J. Butler
Address Unknown

\$163 Finding program length—The FRE function tells how much free memory is in your computer at any moment. If there's a Basic program in your VIC's memory, you can tell its length in bytes by entering:

```
PRINT xxx - FRE(0)
```

where xxx is the Bytes Free value your computer displays when first turned on.

A bug in the C-64 makes FRE return a negative value if there's less than 32K of free memory. The following statement allows for the bug and gives the true length of the Basic program in C-64 memory.

```
PRINT 38911 - (FRE(0) - (FRE(0) < 0) * 65536)
```

In both cases, the 0 after the FRE can be changed to any number or letter; its value doesn't affect the result at all.

Ken Lundy
Corona, CA

\$164 ASC finder—This short program makes it easy to find the ASC value for any keyboard character. You can then print the character using PRINT CHR\$(x), where x is the ASC value determined here.

```
1 GET AS : IF AS = "" THEN 1
2 PRINT AS, ASC(AS) : GOTO 1
```

James M. Byrne
York Harbor, ME

\$165 GOTO nothing—If you're using a GOTO statement in a place where every byte counts (such as in a one-liner), start with line 0 and use GOTO without a line number. It saves a character and still returns to line 0.

Heath Fallin
Baconton, GA

Program of the Month
Computerized Calendar

The Home User's Guide to Commodore Computing

U.S.A. \$2.95
Canada \$3.50
A CWC/I Publication
January 1985

RUN

CREATE YOUR OWN GAMES

Programming Magic at
Your Fingertips

Let There Be Light Pens

Valuable Disk Tips
for Beginners

Avoid the Pitfalls of
Printer Shopping

Plus: Commodore's
Newest Printer



DONALD
DEMERS



Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun. MAGIC is doing what cannot be done.

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge.

Send your own tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237
U.S.A.

If you send a self-addressed stamped envelope to the above address, you'll receive a Trick Writer's Guide.

RUN will pay up to \$50 for each original trick we print.

MAGIC's tricks are numbered in hex, the number system of sorcery and computers.

At the time of last summer's solstice, a transcendental task force began a worldwide quest. Nymphs and nixies, banshees and brownies, swimming, flying, and riding the bus, scoured the Earth from pole to pole. Their mission: to find the finest tricks for this, your New Year's Magic.

On every continent, these thaumaturgical travelers found crowds of Commodore computerists clamoring to contribute their conjurings. Addis Ababa was ababble; Greece and Guam were agog; all with the urge to share their strongest sorcery. In the end, the best from sixteen countries, from Argentina to Uruguay, were chosen for this issue. As you work these tricks and add them to your bag, consider this literal truth: The power of your Magic extends to the ends of the Earth!

\$166 Reclaiming erased programs

—If you accidentally erase a program from memory when using the New command, there's an easy way to reenter it without retyping. Just move your cursor onto any part of the first line, then press the return key. Repeat the process for the other lines on the screen (except for NEW), and your program will be reclaimed (prove the fact by listing the program). The trick works well for the

short programs that beginners practice on, since many of them can be listed in less than a whole screen.

Douglas Shepherd
Addis Ababa, Ethiopia

\$167 Program subsets—If you want to extract a few lines from a program (for example, a sound or scoring subroutine), there's an easier way than by deleting all the unwanted lines. The method is to load the program, list the desired lines on the screen, then enter NEW. Move your cursor onto each of the lines you want to save, and press the return key. This will put the lines into memory as a new program, which can easily be saved. The method can be used to save lines that are not contiguous, as well.

If you want to extract more lines than can be listed on the screen at one time, just go through the procedure more than once, saving each segment with a different name. Then merge all the segments together, using the following procedure.

- Load and List segment #1.
- Load segment #2.
- Put your cursor on each of the listed lines from segment #1, pressing the return key on each line.
- Save the combined segments, and repeat as necessary.

Ian Hayes
Westville, South Africa

\$168 Sorcerer's handbook—If you're a fan of Magic, you must get a copy of RUN's special extra issue, advertised elsewhere in the magazine. It has 60 pages of Magic, including every trick published in 1984, plus over 150 new ones. The tricks are organized by topic, and a comprehensive index is included. We've tried to make this the best computer book ever printed, and rumor has it we've succeeded.

The Editors

\$169 Trace utility—The accompanying program traces the execution of any Basic program, a procedure which can dramatically ease debugging. As printed, Trace is for the C-64. For the VIC, change 189 to 221 in line 840. After you've typed in the program, enter in Direct mode:


```
FOR X=1 TO 54: READ Y: Z=Z+Y: NEXT: PRINT Z
```

The computer should print 6341 for the C-64 version; 6373 for the VIC. Any other number means there's an error in your Data statements. Once the proper number is printed, save Trace on disk or tape.

Running Trace puts a machine language program into memory, and displays its controlling SYS commands on the screen. You should record these commands for future reference. Type SYSxxx[return], where xxx is the appropriate number from the screen display, to either enable or disable the tracing function. While enabled, Trace will print the line number of each Basic statement as it is executed. To trace a program, first load and run Trace. Then load a Basic program, enable Trace, and run the Basic. Tracing the following test program will give you a good understanding of Trace's workings.

```
10 PRINT "A": PRINT "B": X=5: Y=6
20 PRINT "C": PRINT "D": Z=7
```

Notice how four statements are traced in line 10, plus three in line 20.

To get a hardcopy of what you're tracing, add this line at the start of the program being traced:

```
5 OPEN 4,4: CMD4
```

You can make Trace's SYS calls a part of the traced program, to limit tracing to those parts where it is needed. Try enabling/disabling Trace before/after one of the Print statements in the test program, and you'll see how this feature can be used.

As printed, Trace's machine language resides in the cassette buffer, where any tape activity will overwrite it. But the machine language is completely relocatable; to put it in a protected area at the top of memory, add:

```
115 POKE 56,PEEK(56)-1: CLR: S=5+PEEK(56)*256
```

Stanley Tobojka
New Bedford, MA

```
100 PRINT"(SHIFT CLR)TRACE UTILITY -
MAGIC(CRSR DN)"
110 S=828: REM RELOCATABLE START ADDR
120 FORX=S TO S+53:READ Y:POKE X,Y:NEXT
130 PRINT"SYS";S+22;"ENABLES,"
140 PRINT"SYS";S+43;"KILLS."
828 DATA 165,058,201,255,240,013
834 DATA 169,060,032,210,255,032
840 DATA 201,189,169,062,032,210
846 DATA 255,108,251,000,173,008
852 DATA 003,133,251,173,009,003
858 DATA 133,252,169,060,141,008
864 DATA 003,169,003,141,009,003
870 DATA 096,165,251,141,008,003
876 DATA 165,252,141,009,003,096
```

\$16A Direct tape reading—When a program using cassette files is troubled with errors, it often helps to see what is recorded on the tape. This routine will display the data:

```
10 OPEN 1
20 GET #1,A$
30 PRINT A$;: GOTO20
```

To verify what is being written on the tape, use OPEN x,3,1 instead of OPEN x,1,1. This will output the data to the screen instead of the cassette. In either case, use the CTRL key to slow down the listing.

Max W. Kuypers
Haugesund, Norway

\$16B Debugging hint—When debugging a program with a lot of variables, I find it helpful to "echo print" the variables. This is done by putting a Print statement in the program each time a variable is defined or updated. For example, to echo print the variable A, I enter:

```
160 A=INT(RND(0)*10): PRINT A
```

When debugging a program like this, it's easy to find where a variable is going astray, since each value is printed as the program is run.

James Ryan
Winthrop, MA

\$16C Speech synthesis—If you have a speech synthesizer, it can make Data statement debugging much easier. For example, here's how your program might read data:

```
10 FOR T=0 TO 62: READ Q: POKE 832+T,Q: NEXT
```

The speech synthesizer will pronounce the numbers in your Data statements if you change this statement to:

```
10 FOR T=0 TO 62: READ QS: FOR D=1 TO 500: NEXT:
SPEAK=QS: NEXT
```

All you have to do is follow along in the program listing, noting errors when they appear. When you've finished debugging, of course, change your program line back to its original form.

Bryan Jacques
Lyn, Ontario
Canada

\$16D Typing tip—Ever lose your place while typing a program from a magazine? Try cutting a piece of colored cellophane (approximately 9 inches long and 2 inches wide). Rub it on the page with the program, to build up static electricity, and it will stick to the page anywhere you slide it! Now use your magic cellophane to keep track of your place on the page. If it starts to slide off, just give it another rub.

Wake Lankard
Kenner, LA

\$16E West Indies update—The personal computing craze is slowly arriving in the Caribbean. In the Netherlands Antilles, the Commodore line is sold by

Continued on p. 114.

From p. 12.

NCR at very high prices. A C-64 goes for close to \$500 U.S., a 1541 for close to \$400, if you can find one. I couldn't even get a delivery date from the people I spoke with about a disk drive. Consequently, most people down here use the Datassette.

Ralph S. Lees, Jr.
St. Maarten
Netherlands Antilles

\$16F Jumpman jiminy—Jumpman is one of the C-64's best commercial games, with great sound and challenging multi-level screens. Unfortunately, a lot of us never get to see the higher level screens because we always run out of jumpmen. Here's a way to avoid running out.

Load the game boot and run it. Exactly 90 seconds after hitting the return key, simultaneously press the run/stop and restore keys, which will reset your machine. Your screen will be blue, and the cursor will be flashing. Now enter:

```
POKE 24015,173 : POKE 54296,15 : SYS 9*4096
```

If all is well, the Options screen should come on. Proceed normally, playing the game as usual but with one exciting difference: You'll never run out of jumpmen! When one of your men is killed, a new one appears, while the number you have left remains at seven.

Tim Tan
Winnipeg, Manitoba
Canada

\$170 Terminating games—Many computer games end with the player's man, android or spaceship being blasted or otherwise put to death. Unlike the real-world variety, this death is generally reversible, often by pressing a key. Vigorous pursuers of realism will appreciate the routine below, which is a *real* android killer. Executing the appropriate version blacks out the screen, disables all keys and sounds, and thoroughly corrupts any Basic program in memory. There is *no* way to recover. The first routine is for the C-64, the second is for the VIC-20.

```
6400 REM ** KILLER FOR C-64 **
6410 POKE808,225:POKE53280,0:POKE53265,11:POKE649,0
6420 FORX = 54272TO54296:POKEX,0:NEXT
6430 FORX = 2048TOPEEK(61) + 256*PEEK(62)
STEP7:POKEX,PEEK(56324) :NEXT:WAITX,0

20000 REM ** KILLER FOR VIC-20 **
20010 PRINTCHR$(147):POKE808,127:POKE36879,8:POKE649,0
20020 FORX = 36874TO36878:POKEX,0:NEXT
20030 FORX = 4096TOPEEK(61) + 256*PEEK(62)STEP7:
POKEX,PEEK(162):NEXT:WAITX,0
```

Louis F. Sander
Pittsburgh, PA

\$171 Program password—I recently devised a security lock system for my programs. Now, persons not knowing the secret code are prevented from using my programs. The code is any number; where the

program below says "code," just plug in a number. The program should be inserted before the main program.

```
1 POKE 800,100 : POKE 819,245
2 INPUT "{SHFT CLR}ACCESS CODE";A
3 IF A <> code THEN NEW
4 Continue the program here
```

Sean Fitzpatrick
St. John's, Newfoundland
Canada

\$172 Magic program protector—This procedure will give a rather secure no-list protection to any C-64 Basic program. First, enter the following line exactly, with no embedded spaces except where shown. Be careful, as the line is designed to list in a very tricky manner.

```
0 P{SHFT O}2126,98:P{SHFT O}2127,8:REM""{DELETE}
{CTRL RVS}{28 T's}{CTRL RVS OFF}
{SPACE}REM{SPACE}"PROTECTED BY MAGIC"
```

Once it is entered, do *not* run it. Instead, make this Direct mode entry:

```
FOR X = 2125 TO 2127 : PRINT PEEK(X) : NEXT
```

If three zeroes are printed, line zero is correct; otherwise, enter it again from the beginning. When you have the three zeroes, enter this line:

```
1 POKE 2126,0 : POKE 2127,0
```

Once again, do *not* run the program. Do save it, giving it some descriptive name, like Magic Protector.

Now you are ready to test the protection routine. Add some simple program to lines 0 and 1; something like

```
10 PRINT"HOUDINI"
```

is good enough, but the program can be as complex as you'd like. Run the program to satisfy yourself that it works, then try to list it. If all has gone well, nothing but the last part of line 0 will list, but the program will run perfectly. Any attempt to add or delete lines will corrupt the program.

Now, whenever you want to protect a program, just append it to Magic Protector. The first time you run it, everything but line 0 will disappear, and non-magicians will be hard pressed to crack your security. The program can be saved in its protected form, allowing you to give copies to others without letting them see the code.

Hugo Vasquez-Aragon
Lima, Peru

\$173 SX-64 TV display—The SX-64 lacks a built-in RF modulator. To display its video signal on a TV, you can avoid an external modulator if you have a video cassette recorder. Just plug the video output of the SX into the input of the VCR, and look at the output of the VCR on your TV.

D.L. Jassby
Princeton, NJ

\$174 Soap opera computing—Watching a blank screen during long cassette loads becomes very

50% OFF **EDU-TAX** 50% OFF

EDU-TAX is a tax analysis program specifically designed for the average family.

Don't be caught surprised at tax time. Know exactly what your taxes will be all year long. **EDU-TAX** is a menu driven program with extensive on screen explanations. **EDU-TAX** includes these schedules and forms:

Form 1040
Schedule A — Itemized Deductions
Schedule B — Interest/Dividends
Schedule C — Business Income
Schedule D — Capital Gains/Losses
Schedule E — Supplemental Income
Schedule G — Income Averaging
Schedule W — Marital Deductions
Form 2106 — Unreimbursed Employee Expense
Form 2119 — Sales of Residence
Form 4684 — Casualties and Theft Losses

EDU-TAX is currently 50% off the suggested retail price of \$50.00. **EDU-TAX** is now only **\$25.00** plus \$2.00 for shipping and handling. Direct only.



EDU-TAX

P.O. Box 16785

San Antonio, TX 78216



Texas Residents add 5%.

Commodore 64-Disk — Atari 48K-Disk

**CHECK
OR
MONEY
ORDER**

LOW COST SOFTWARE

Are you tired of paying high prices for your software? Let John Henry Software save you money!

We distribute public domain software for your VIC 20™ or COMMODORE 64™. We've tested and documented each program to guarantee you hours of fun and useful learning experiences. We specialize in prompt delivery of your software, even if you order tapes, and we guarantee our product.

You'll also receive our **FREE** program reference book containing documentation for all our programs.

VIC 20

Group VG 62 Games for Everyone \$7.95
Group VP 54 Programming, Demo, Business
and Home \$7.95
Group VE 35 Educational Programs \$7.95

*COMMODORE 64

Group CG 26 Games for Everyone \$7.95
Group CP 30 Programming, Demo, Business
and Home \$7.95
Group CE 16 Educational Programs \$7.95
Group CA 5 Adventure Games (disk only) \$7.95

*For a limited time only, when you purchase 3 COMMODORE 64 disks, we'll send you the 4th one free!

When ordering, specify group and tape or disk.
Send check or money order payable to:

John Henry Software
P.O. Box 39021
Cincinnati, Ohio 45239

Don't wait! Order your software today! Or write for your free program reference book. You'll be glad you did!

R Magic

boring. If you are using a TV as a monitor, you can solve this problem by flipping the TV/computer switch and watching some television. Switch back when the cassette drive stops, and your computer program will be waiting.

Steven J. Walsh
Seaford, NY

\$175 **Flagrant chauvinism**—The accompanying C-64 program shows the colors on your video display. Vexillologists will love the picture, in spite of the flaw in the canton.

Kevin D. Skorupa
Biloxi, MS

```
10 REM ** FLAGRANT CHAUVINISM **
15 A$="{4 SPACES}" + CHR$(18)
20 B$=CHR$(146)
25 C$="{16 SHFT SPACES}":C$=C$+C$
30 D$="*****"
35 E$="{HOME}{3 CRSR DNs}"
40 F$=A$+C$
45 G$=A$+B$+C$
50 H$=A$+RIGHT$(D$,13)+B$
55 J$=A$+LEFT$(D$,13)+B$
60 POKE53265,91:POKE53280,0:POKE53281,0
65 POKE53282,1:POKE53283,6:POKE53284,2
70 PRINT"{SHFT CLR}{CTRL 2}"E$
75 FORX=1TO6:PRINTF$CHR$(141)G$:NEXT
80 PRINTF$E$
85 PRINTH$,,,J$,,,H$,,,J$,,,H$,,,J$,,,H$
90 GOTO90
```

\$176 **C-64 special effect**—This one-liner will blow your socks off. Watch it run for a while, then press and hold down the space bar. You need a color display to see the full effect.

```
1 FOR X=0 TO 1 STEP 0:POKE 53280,3:POKE 53280,6:
NEXT
```

After replacing your socks, you can try replacing the 3 and the 6 with different numbers.

Mark Mankins
Malvern, OH

\$177 **Color-coded disks**—For easy identification of disks, use colored strips of electrical tape. Use different colors for each type: blue=games, red=utilities and so on.

David Barrowman
St. John's, Newfoundland
Canada

\$178 **Magnetic fields**—We've all heard about the danger of storing your disks close to the monitor or TV. Possible magnetism could wipe out your

whole library. If you worry about this sort of thing, place a small magnetic compass between the set and the proposed location of the disk box. If the magnetic field is dangerous to the disks, the needle will swing whenever it's in the field.

Jim Stephens
Nashville, TN

\$179 Inexpensive disk mailers—To make my own disk mailers, I cut two squares of corrugated cardboard slightly larger than a disk and its envelope. Then I put the disk between them, making sure the corrugations on the two pieces run at right angles to each other. When I tape the four corners, the resulting sandwich is strong, light and compact, and can be mailed in any envelope large enough to hold it. Photographers have used this method for years, and their valuable prints are seldom damaged in the mails.

Alan Sperling, Esq.
Mount Lebanon, PA

\$17A Appending to files—There is a command that can be used on the 1541 disk drive to add data onto an existing sequential file.

```
200 OPEN 3,8,3,"0:FILENAME,S,A"
```

The A stands for append; for some reason, this command is not in the owner's manual for the 1541.

Keith Marshall
San Juan, Trinidad

\$17B Printed disk directories—If you set your printer on condensed pitch with a small line feed, the printed directories will be physically compact. These small printouts can be taped to the disk sleeve or put into a binder. On my Gemini printer, I do this:

```
LOAD"$",8  
OPEN 4,4 : CMD4  
PRINT CHR$(15) CHR$(27) CHR$(48)  
LIST
```

On the Commodore 1526, a similar effect can be gotten by entering:

```
OPEN 6,4,6 : PRINT#6,CHR$(22) : CLOSE6  
LOAD"$",8  
OPEN 4,4 : CMD4 : LIST
```

The characters won't be any smaller than normal, but the line spacing will be very tight.

George Hu
Renton, WA

\$17C Underlining with the 1526—There's a rumor going around that the 1526 won't underline. But CHR\$(141) gives you a carriage return without a linefeed, allowing you to overprint the line from the beginning. Try this for a demonstration:

```
10 OPEN 4,4  
20 PRINT#4,"THIS IS A COMMODORE
```

```
PRINTER"CHR$(141)"{10 SPACES}{9 COMD @}"  
30 CLOSE4
```

Marion Deland
New York, NY

\$17D Programming trick—While programming, if you are not sure whether a line must be deleted, just insert a REM statement at the beginning of that line. This way, the line will not be executed if you run your program, and you'll be able to know if you have to keep it in.

Alain Niquet
Alma, Quebec
Canada

\$17E Printing quotes—If you want to print quotation marks, you'll soon discover that you can't put them inside a Print statement. The solution is to Print CHR\$(34).

Andrew Apold
Panama Canal Zone

\$17F Program delays—To halt your program until a key is pressed, try this:

```
10 PRINT "PRESS ANY KEY TO CONTINUE"  
20 POKE 198,0 : WAIT 198,1:POKE 198,0  
30 Program continues here
```

Andres Rios
Montevideo, Uruguay

\$180 Easier C-64 sound—To get good ADSR settings, you don't need to go to the manual and spend all afternoon adding numbers until you get a sound you like. Instead of that, you can do this (for voice #1):

```
100 POKE 54277,16*A + D : POKE 54278,16*S + R
```

where A = attack, D = decay, S = sustain and R = release. The values must be between 0 and 15.

Sergio Daniel Freue
Buenos Aires, Argentina

\$181 Speedy execution—There are two ways of putting polynomial calculations into a Basic program. One closely duplicates the normal algebraic notation, while the other uses parentheses and looks somewhat unusual. The unusual-looking method is illustrated below, along with proof that it is much more rapidly executed than the standard method.

```
10 A=2 : B=3 : C=4 : D=5 : X=2.5 : T=TI  
20 FOR I=1 TO 100  
30 Y=A*X + B*X^2 + C*X^3 + D*X^4  
40 NEXT
```



```
50 PRINT "TIME="TI-T,"ANSWER="Y
60 T=TI:FOR I=1 TO 100
70 Y=((D*X+C)*X+B)*X+A)*X
80 NEXT
90 PRINT "TIME="TI-T,"ANSWER="Y
```

Dennis P. Dykstra
Vienna, Austria

\$182 Calculated GOTO—This routine lets you go to a line number that is calculated within your program. To use it, just set variable GL equal to the line number to be executed, then enter GOTO 63000. The routine can be put in any three consecutive lines, provided the third line is typed exactly as shown here, with no spaces between any of the characters.

```
63000 GL$=STR$(GL):LN=LEN(GL$)-
1:GL$=RIGHT$("0000"+RIGHT$(GL$,LN),5)
63010 FOR DI=1 TO 5:BY(DI)=ASC(MID$(GL$,DI,1)):
NEXT DI
63030 AD=PEEK(62)*256+PEEK(61):FORDI=
1 TO 5:POKEAD+51+DI,BY(DI):NEXT:GOTO00000
```

The routine works by Poking memory to change the last characters of the third line. You can test the routine by setting GL, then executing it, then listing it. In the listing, the 00000 should be replaced by the value of GL.

Douglas Johnson
Evesham, England

\$183 Normal distribution—The normal distribution, or bell-shaped, curve is a useful tool in statistics and quality control. If ME is the mean of the distribution, and SD is the standard deviation, this line will produce Xs that are randomly distributed.

```
100 X=ME+SD*((-2*LOG(RND(0)))
{UP ARROW}.5*COS(2*PI)*RND(0)))
```

Put the line in a For. . .Next loop, and it will generate as many numbers as you'd like. INT(X) could be used to generate integers, if that's your pleasure.

Frank Biondi
Pittsburgh, PA

\$184 Toggling—If you need to toggle between two values in a program, set the toggle variable to one of the values, then use:

```
TG=[sum of the two values]-TG
```

For instance, if the two values were 3 and 7, you'd execute TG=10-TG each time you needed to toggle the value.

There's also a quick way of toggling between three or more values, as long as there's a regular relationship between them. Without going into the details, the formula for values of 1, 2 and 3 is:

```
TG=TG+1+(TG=3)*3
```

With a little work, the formula can be adapted to work with any regular sequence of values.

Clay Carr
Westerville, OH

\$185 C-64 cursor tricks—You can speed up your cursor with POKE 56341,1. You can slow it down with POKE 56341,255. If you combine these tricks with POKE 650, any value over 127, you'll discover some real fun.

Harry I. Papatheofilopoulos
Peristeri, Greece

\$186 VIC time clock—If you have the Super Expander, you can find out what time it is by pressing the f1 key. Just set TI\$ to the current time, then enter:

```
KEY1,"TIME=" + TI$
```

Reinaldo Martinez
Rio Piedras, Puerto Rico

\$187 Reset tip—The C-64 Reset command SYS 64738 will not disturb most machine language programs in memory, but it does seem to wipe out anything in the cassette buffer, locations 828-1019 decimal. Safe areas for machine language programs are Basic RAM, 2048-40959, and alternate RAM, 49152-53247.

Peter Heine Jorgensen
Aarhus, Denmark

\$188 C-64 uncrasher—When your keyboard locks up while you are typing, try typing {SHIFT 3}. The screen should respond with "Press Play On Tape," and if you follow those instructions then press the stop key, you should be able to continue your work.

Douglas P. Oesterle
Agana, Guam

\$189 Error messages—Memory location 157 (\$9D) controls whether or not error messages and control messages will be displayed on the screen. In Direct mode, for instance, Loading, Searching and Found messages are displayed, while in Program mode they are suppressed, all because of different values Poked into location 157. You can control the display yourself as follows:

```
POKE 157,0—Suppress all messages
POKE 157,64—Enable error messages
POKE 157,128—Enable control messages
POKE 157,192—Enable error and control messages
```

Mike Tranchemontagne
Nashua, NH

\$18A If...Then...Else—Unfortunately, Commodore Basic doesn't have this useful construction, which allows you to redirect the program if the If statement fails. You can use the ON...GOTO statement to give a similar effect, as in this example:

```
400 GET AS : IF AS = "" THEN 400
500 ON((AS = "Y") + 2) GOTO 600 : ON ((AS = "N") + 2) GOTO 700 :
    GOTO 400
600 PRINT "YES" : END
700 PRINT "NO" : END
```

Note how the two tests have been put on the same program line.

Mike Sokolewicz
San Francisco, CA

\$18B STOP and CONT—These two commands can be used as valuable debugging tools. CONT will restart a program that has been halted by the stop key, or by an End or Stop statement. Execution will continue from the statement following whatever caused the halt.

You can put STOP into your program at various test points. When the program encounters a Stop command, the number of the last line executed will be shown on the screen, proving that the program reached the line in question. While the program is halted, you can check the value of variables, and can even change them if you'd like. A Direct mode CONT will, of course, resume program execution.

Charles Brogdon
Dalton, GA

\$18C Uses for REMS—REM statements are much more helpful than just describing a subroutine or giving credit to the program originator. I use them at the beginning of each program to list the source and location of the program, plus any special instructions that may be required in using it. It saves me from having to dig through stacks of magazines trying to find the article. For example:

```
10 REM FILE HANDLER—RUN FEB 84 PAGE 48
20 REM USE SPACE BAR TO SKIM PAGES. USE RETURN TO
    SKIM CATALOG.
```

Howard VanDover
Trenton, MI

\$18D Timekeeper—For an easy way to keep track of time while programming, try this: As soon as you turn on your computer, type the following in Direct mode.

TIS = "hhmmss"

where hhmmss is the correct time in hours, minutes and seconds. Then, whenever you want to know the time, just type PRINT TIS, and your built-in clock will tell you. You should note that the clock isn't extremely accurate and will be slowed down by tape operations, but it's good enough for most purposes.

Darren Atwater
Delta, British Columbia
Canada

100,000 CHOOSE COMAL
50,000 USERS†

(1) DISK BASED COMAL Version 0.14

- COMAL STARTER KIT—Commodore 64™ System Disk, Tutorial Disk (interactive book), Auto Run Demo Disk, Reference Card and COMAL FROM A TO Z book.
\$29.95 plus \$2 handling

(2) PROFESSIONAL COMAL Version 2.0

- Full 64K Commodore 64 Cartridge
Twice as Powerful, Twice as Fast
\$99.95 plus \$2 handling (no manual or disks)
- Deluxe Cartridge Package includes:
COMAL HANDBOOK 2nd Edition, Graphics and Sound Book, 2 Demo Disks and the cartridge (sells for over \$200 in Europe). This is what everyone is talking about.
\$128.90 plus \$3 handling (USA & Canada only)

CAPTAIN COMAL™ Recommends:

The COMAL STARTER KIT is ideal for a home programmer. It has sprite and graphics control (LOGO compatible). A real bargain—\$29.95 for 3 full disks and a user manual.

Serious programmers want the Deluxe Cartridge Package. For \$128.90 they get the best language on any 8 bit computer (the support materials are essential due to the immense power of Professional COMAL).

ORDER NOW:

Call TOLL-FREE: 1-800-356-5324 ext 1307 VISA or MasterCard
ORDERS ONLY. Questions and information must call our
Info Line: 608-222-4432. All orders prepaid only—no C.O.D.
Send check or money order in US Dollars to:

COMAL USERS GROUP, U.S.A., LIMITED
5501 Groveland Ter., Madison, WI 53716

TRADEMARKS: Commodore 64 of Commodore Electronics Ltd. Captain COMAL of
COMAL Users Group, U.S.A., Ltd
† estimated

Circle 327 on Reader Service card.

Now there's PASCAL for the Commodore 64. And at a mini price.

Kyan PASCAL is a full-featured implementation of PASCAL — not a subset! With these features:

- ☐ high-performance compiler and comprehensive set of error messages for faster debugging
- ☐ speeds up to 40 times faster than Commodore Basic
- ☐ built-in full screen editor
- ☐ support for files, pointers, record types, sets and ordinal types used in sophisticated data structures.
- ☐ plus, a comprehensive tutorial manual illustrating the speed and power of PASCAL through sample programs.

Kyan PASCAL lets you develop programs on your Commodore 64 that are transportable to most mainframes. So it's perfect for students and working at home.

Try it for 15 days.

Order Kyan PASCAL, and if you're not completely satisfied, return the diskette and manual within 15 days for a full refund.

Kyan PASCAL with complete tutorial manual . . . \$49.95
(Add \$4.50 per copy for postage and handling. \$9.50 outside North America. California residents add 6.5% sales tax.)

To order, call 415/775-2923.

(VISA and MasterCard accepted.)

Or send check or money order to: **Kyan Software,
Suite 183, 1850 Union Street, San Francisco, CA 94123.**
Sorry, no C.O.D. orders accepted.

kyan

Program of the Month
Beat Those
Tax-Time Blues

The Home User's Guide to Commodore Computing

RUN

U.S.A. \$2.95
CANADA \$3.50
A CWC/I Publication
February 1985

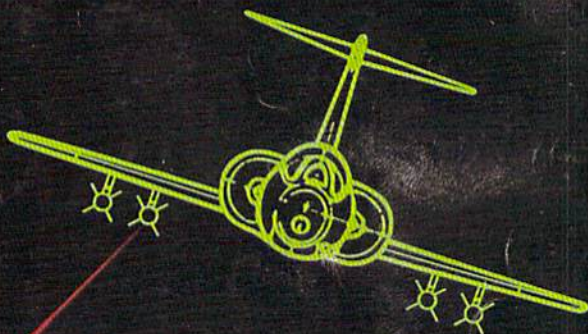
JOYSTICKS!

Get a Grip
On Arcade Action

TAG—YOU'RE IT!
A New Twist
To an Old Game

WORD TEASERS
Can You Unscramble
The Code?

COMPUTER
CAMARADERIE!
Plug into a Club



MAGIC



Compiled by *LOUIS F. SANDER*

MAGIC is tricks, MAGIC is fun. MAGIC is doing what cannot be done.

Every month, Magic brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). We pay up to \$50 for each original trick we print. Send your tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a Trick Writer's Guide.

From Lapland to Los Angeles, legions of learned ladies are discovering the details of digital dazzlement. As you'll see from this month's Magic, their work is of the highest sort.

Male or female, your own ideas give life to our world of witchy wonders. Each month, readers send us something for everyone, and we print the very best from a wide range of subjects. In addition to simple tricks, we look for intermediate to advanced material, shorter than two typewritten pages, whose programs will fit on one screen. Tricks like this month's DOS Improver, Sort Subroutine and Magic ML Poker are most welcome in Magic's hallowed halls.

As you can see from this month's assortment, there's voodoo enough for all. Wanga, candle, book and bell, Magic's doing very well... Shamans, start your sortilege!

\$18E My valentine—Listed, these lines lack logic. Run, they're redolent with sentiment. Together, they make a valentine that must be seen to be believed. So type them in for your sweetheart—you won't be disappointed.

The program runs on a VIC or C-64 and is best experienced on a well-adjusted color display with the sound turned up to max. The more you know about exponential notation, the better you'll get the message.

```
100 REM MAGIC VALENTINE WITH SOUND
110 REM CREATED BY LOUIS F. SANDER
200 PRINT "{SHFT CLR}":S=54296:IFPEEK(213)=2
  1THENS=36878
202 POKE53281,1:POKE198,4:POKE631,28:POKE63
  2,211:POKE633,157:POKE634,5
204 A$="MFU!NF!DPVOU!UIF!XBZT;IPX!EP!J!MPWF
  !UIFF@":P$="{HOME}{2 SPACES}{6 CRSR DNs
  }"
206 FORI=1TO41:J=(-1+ASC(MID$(A$,I))):K=K+J
  :B$=B$+CHR$(J):NEXT
208 IFK<>2756THENPRINT"TYPING ERROR IN A$":
  STOP
210 A$=MID$(B$,23):B$=LEFT$(B$,22):PRINT"(C
  RSR DN)"A$:PRINT"{CRSR DN}"B$
212 FORI=1TO33:GOSUB216:FORJ=1TO300-I{UP AR
  ROW}1.8:NEXT:NEXT
214 I=2.1*I:GOSUB216:GOTO214
216 POKES,15:POKES,0:PRINTP$I:RETURN
```

Louis F. Sander
Pittsburgh, PA

\$18F Screen gem—My junior high school students find it greatly entertaining and informative to enter POKE 53265,59 and then to type on the C-64 keyboard. Pressing the run/stop/restore keys gets you out.

Katherine Prescott
Coos Bay, OR

\$190 DOS improver—This program changes the C-64's DOS 5.1 program so it can be easily saved onto other disks. Here's how to use it:

- Put the test/demo disk into your drive
- Type LOAD "DOS 5.1",8,1 {RETURN}
- Insert a formatted disk onto which you want to save DOS 5.1
- Type NEW {RETURN}
- Load and run this program
- Type SYS 52224 {RETURN}
- Type SYS 52400 {RETURN}

DOS 5.1 will now be saved onto the disk in your drive, and the C-64 will be reset. If you want to save the DOS

onto another disk at this time, just put the new disk in the drive, and resurrect your wedge by entering these commands:

```
SYS 52224 {RETURN}
@#8 {RETURN}
```

Then save it by typing `SYS 52400 {return}`. You can repeat these steps as many times as you like; many people put a copy of DOS 5.1 on every disk they own.

Once DOS 5.1 has been saved on a disk, you can also save Test/Demo's Basic loader, named C-64 Wedge, if you choose to. Since C-64 Wedge is a Basic program, saving it is a simple matter. When loading DOS into memory, you don't need the loader at all if you type:

```
LOAD "DOS 5.1",8,1 {RETURN}
NEW {RETURN}
SYS 52224 {RETURN}
```

When you see the DOS 5.1 prompt, you're in business, just as if you'd used the loader.

The best way to learn about the wedge is to read "Mysteries of the Wedge Revealed" (*RUN*, September 1984).

```
10 REM{2 SPACES}DOS IMPROVER
20 REM{2 SPACES}CREATED BY LOUIS F. SANDER
30 FORA=1TO69:READB:C=C+B:NEXT:RESTORE
40 IFC<>7162THENPRINT"DATA ERROR":STOP
50 FORA=1TO32:READB:POKE52346+A,B:NEXT
60 FORD=1TO37:READE:POKE52399+D,E:NEXT
91 DATA 141,068,079,083,032,053,046,049
92 DATA 032,045,032,083,089,083,032,053
93 DATA 050,052,048,048,032,084,079,032
94 DATA 083,065,086,069,141,000,000,000
95 DATA 169,008,170,160,255,032,186,255
96 DATA 169,007,162,124,160,204,032,189
97 DATA 255,169,000,133,034,169,204,133
98 DATA 035,169,034,162,090,160,207,032
99 DATA 216,255,076,226,252
```

L.F.S.

\$191 Neater wiring—A solution to your computer room's rat's nest of wires and cables can be found in your local garden shop. Double-sided strips of Velcro intended for use as plant ties can be cut to any length to bundle up those runaway wires. The strips can be easily moved, unwound, loosened, tightened and reused, giving greater flexibility than electrical ties provide.

Donna A. Trefry
Scarborough, ME

\$192 Word processor glossary—Dedicated office word processors often provide a glossary function that allows frequently used words and phrases to be recalled by a two-letter code. This function can be approximated on any word processor that offers the Search and Replace feature. As the document is typed, use a two- or three-letter acronym. Then go back and search and replace every acronym with the desired phrases. For example, I used MRC in a report where I needed to use the phrase "Microcomputer Resource Center" numerous times.

Jo Ann Strohn
Dublin, OH

\$193 Wordpro parentheses—With many printers, you get more readable copy if you use spaces to separate parentheses from the material they enclose. But sometimes that leaves you with a dangling parenthesis (one that sits by itself at the beginning or end of a printed line). To avoid the problem, try using shifted spaces to separate your parentheses. With Wordpro, and perhaps with other word processors, the computer treats the shifted space as an invisible letter and will not break a line on it.

You can also use this trick to make the line break occur where you want it in the printout. Just be sure you don't type too long a line of words and shifted spaces. If the combination won't fit on a single line, you'll abort printing and get an error signal.

Sarah Knutti, MD
Bethesda, MD

\$194 Making tables—If you need a table for a term paper or business report and are having trouble using a word processor to set it up, try using a spreadsheet program. The spreadsheet's features will greatly simplify the mechanics of spacing and tabulation.

Elizabeth Oman
Lindsborg, KS

\$195 Easy Script music—On my husband's version of Easy Script, pressing `f1` and `CTRL 3` causes the computer to play Pomp and Circumstance through the monitor's speaker. My own version of the program, an older one, doesn't have this feature at all. So if you've heard of the Easy Script/Pomp and Circumstance connection, but can't make it work on your own machine, maybe you have an older version of the program.

Karen Rhodes
Orange Park, FL

\$196 Database Deluxe improved—If you love the Database Deluxe program printed in *RUN* (February 1984) and ReRUN, but wish the printout were single spaced rather than double, make the following changes in the VIC version (C-64 owners should make the same changes to lines 740 and 790):

Line 74—Delete the `CHR$(10)` and change `LL=LL+2` to `LL=LL+1`

Line 79—Alter the paging statement to read `IF LL>55 THEN FOR NL=LL TO 67:` (rest of line is okay)

The last line printed on page one is 55, and 67 is the first line printed on page 2. The difference between these two numbers determines the depth of the top and bottom margins. Twelve gives a nice one-inch margin.

Lorraine Richards-May
Leesburg, IN

Continued on p. 86.

From p. 10.

\$197 Making Simon simpler—If you have Simon's Basic, using the Key function can save much time while developing a program. Saving the key setup routine onto tape or disk can provide additional savings. Just define your keys, enter DISPLAY and insert a line number before each key definition. After each line number is inserted, press the return key to add your new line to the program in memory. Then save this key-definition subroutine for future use. I have several such routines—one for program development, another for running programs and so on. Here are a few key lines to illustrate the principle:

```
58000 KEY1,"LIST" + CHR$(13)
58010 KEY2,"PAUSE 30" + CHR$(13)
58020 KEY3,"RENUMBER" + CHR$(13)
```

Susan Morrell
Lancaster, CA

\$198 Disk backup improvement—The Commodore program Single Disk Backup V1.0, by Michael Schaff, is great, but slow. If you add a sound subroutine, the program can notify you each time you need to intervene, and you can do other things while your disk is being copied. Add the following lines.

```
1000 FOR L = 54272 TO 54296 : POKE L,0 : NEXT
1010 POKE 54296,15 : POKE 54277,128 : POKE 54278,128 : POKE
      54276,33
1020 POKE 54273,50 : POKE 54272,60
1030 FOR T = 1 TO 1500 : NEXT : POKE 54276,16 : FOR T = 1 TO
      100 : NEXT
1040 FOR L = 54272 TO 54296 : POKE L,0 : NEXT
1050 RETURN
```

If you insert GOSUB 1000's in lines 465, 540, 700, 720, 725, 865, 890 and 980, the program will signal you at the appropriate times. Start the program, turn up the volume and go about your business.

Ginger Scalet
Brookings, SD

\$199 Sui generis—(These words are Latin for "in a class by itself"; they do describe this trick.) Trick \$EE (RUN, October 1984) purports to translate English into Pig Latin. In true translation, words beginning with vowels do *not* have the initial letter transposed to the end; instead, the syllable "-way" is appended. Also, pure porcine philology moves initial consonant clusters to the end of the word as a group. The English "speak," therefore, is properly translated "cak-spay," rather than "peak-say," as translated by trick \$EE. The accompanying program will perfectly translate any English word into Swine. Quod erat demonstrandum.

```
100 REM{2 SPACES}PIG LATIN - ANNE ABBATE
110 PRINT
120 INPUT"ENGLISH";A$
130 L$=LEFT$(A$,1)
140 IFL$="A"ORL$="E"ORL$="I"ORL$="O"ORL$="U"
      "THENB$=A$:A$="-WAY":GOTO210
150 N=2:IFL$="Q"THEN N=3:GOTO200
```

```
160 M$=MID$(A$,N,1)
170 IFM$="A"ORM$="E"ORM$="I"ORM$="O"ORM$="U"
      "THEN200
180 N=N+1:IFN>LEN(A$)THEN110
190 GOTO160
200 B$=RIGHT$(A$,LEN(A$)-(N-1)):A$="-"+LEFT
      $(A$,N-1)+"AY"
210 PRINT:PRINT"{2 SPACES}SWINE: ";B$;A$
220 GOTO110
```

Anne Abbate
Northport, NY

Editor's Note: The phrase "sui generis" could also be used in the barnyard, to summon a hog named Generis. That makes it, then, in the truest sense of the word, Pig Latin.

L.F.S.

\$19A Magic ML poker—Machine language programs are usually (and conveniently) listed as hexadecimal memory dumps, with an address and eight hex bytes on each line. In many cases, we convert those bytes to decimal form, then type them into Data statements, where a Basic program can read them and Poke them into memory. Unfortunately, this process often introduces errors, and since the Data statements bear little resemblance to the original ML listing, the errors can be very hard to find.

The accompanying program avoids these troubles, letting the original hex dump be used verbatim in the Data statements. It eliminates the use of commas and allows proofreading of Data statements against the original ML dump. Lines 100-170 are the program itself; the others are a test routine that Pokes some letters onto a C-64 screen.

To use the main program on your own ML, just delete the extra lines, then do this:

- In line 110, set variable BA to the decimal value of the ML's beginning address.
- Add your Data statements, each consisting of a line number, the word DATA and the data item as described below.
- Each Data item must consist of a four-hex-digit address, followed by any number of hex bytes (usually eight or fewer), all separated by single spaces. There must be no punctuation marks or other characters on the line. (Most hex listings are very close to this form already.)
- Add a final Data statement, of fewer than six characters, to mark the end of your ML. The number 999 works fine.
- Run the program. As it reads each Data statement, it ignores the four-character address, then checks that each other item is a valid hex byte. (If you type an I for a one, the poker will catch it, showing you the defective entry and the number of the line it's in. Hallelujah!) Finally, it converts the bytes to decimal and Pokes them into the proper locations.

```
10 REM{2 SPACES}MAGIC ML POKER
20 POKE53281,1:PRINT"{SHIFT CLR}":POKE53281,
      6
30 :
100 REM{2 SPACES}MAGIC ML POKER
105 REM{2 SPACES}CREATED BY LOUIS F. SANDER
```



```

110 BA=1024:READHD$:HD$=MID$(HD$,6):IFHD$=""
  THEN170
120 FORP=1TOLEN(HD$)STEP3:BY$=MID$(HD$,P,2)
130 HN=ASC(BY$)-48:HN=HN+7*(HN>9):IFHN<0ORH
  N>15THEN160
140 LN=ASC(RIGHT$(BY$,1))-48:LN=LN+7*(LN>9)
  :IFLN<0ORLN>15THEN160
150 POKEBA+Q,LN+16*HN:Q=Q+1:NEXT:GOTO110
160 PRINT"ERROR IN"PEEK(63)+256*PEEK(64)":
  "BY$:END
170 PRINT"DONE!":END
1000 :
1001 DATA 0400 01 02 03 04 05 06 07 08
1002 DATA 0408 09 0A 0B 0C
1003 DATA 999

```

\$19B Rick-rack—Do you need something to dress up a dull screen in a program? This routine will give you a colorful rick-rack trim. After running it, you can erase the Ready prompt, then fit your printing onto the screen without using the return key. This will help you plan an aesthetic format.

```

10 REM{2 SPACES}RICK-RACK BY ELIZABETH OMAN
20 GOTO40
30 FORX=1TO20:PRINT"{CTRL 8}{CTRL 9}{CMD *
  }{SFT LB.}{CTRL 0}";:NEXT:FORX=1TO20:PR
  INT"{CMD *}{SFT LB.}";:NEXT:PRINT"{COM
  D 7}{HOME}":RETURN
40 PRINT"{SFT CLR}":GOSUB30:FORX=1TO20:PRI
  NT:NEXT:GOSUB30

```

Elizabeth Oman
Lindsborg, KS

\$19C Harmless disk directory—Using the command Load"\$",8 loads the 1541 disk directory into memory, overwriting any program that may already be there. You can avoid the overwriting by using these Direct mode commands:

```

POKE 44,PEEK(46)+1
LOAD "$",8
LIST

```

When you want to return to your Basic program, just type:

```
POKE 44,8
```

Karen Guzowski
South Burlington, VT

\$19D Sort subroutine—You can use the accompanying subroutine to sort the items in any one-dimensional array. When called, it will sort string array S0\$() into ascending order. Before calling it, you must make entries into S0\$(), then set variable S1 equal to the highest subscript of the entries you've made. S0\$() can be dimensioned to any size, but only items S0\$(1) through S0\$(S1) will be sorted. S0\$(0) is not sorted, nor is it counted in S1.

88 / RUN FEBRUARY 1985

```

39999 REM ** MAGIC SORT SUBROUTINE **
40000 S2=S1
40001 S2=INT(S2/2):IF S2=0 THEN 40009
40002 S3=1:S4=S1-S2
40003 S5=S3
40004 S6=S5+S2:IF S0$(S5)<S0$(S6) THEN 40007
40005 S7$=S0$(S5):S0$(S5)=S0$(S6):S0$(S6)=S7$:S5=S5-
  S2:IF S5<1 THEN 40007
40006 GOTO 40004
40007 S3=S3+1:IF S3>S4 THEN 40001
40008 GOTO 40003
40009 RETURN

```

For your protection, the subroutine uses variables with unusual names; avoid using them in the rest of your program, and you'll avoid interference with the sort.

To sort into descending order, change the "less than" symbol in line 40004 to a "greater than" symbol. To sort an array other than S0\$(), change all the S0s in 40004 and 40005 to the name of the new array. To sort a numeric array S0(), delete all the dollar signs in lines 40004 and 40005.

You can use the following program to test your subroutine.

```

10 FOR I=0TO9:READS0$(I):PRINTI;S0$(I):NEXT:PRINT
20 S1=9:GOSUB40000:FORI=0TO9:PRINTI;S0$(I):NEXT:END
30 DATA ZERO,H,A,I,G,D,B,C,F,E

```

Titania Queen
Staten Island, NY

\$19E Logo tips—When using the Logo language on the C-64, you can use the run/stop key to get out of the Editor. Outside the Editor, you can repeat a line continuously by pressing the up arrow key. If you find that your lines or colors overlap, simply use the Doublecolor mode rather than the Singlecolor mode. And finally, in words and lists Logo, you can get multiple blank spaces by putting them inside apostrophes.

Valerie Ann Brown
Brownsburg, Quebec
Canada

\$19F Editing in color—When editing a listing on the screen, it makes things easier if you change the color of your cursor before making your edits. If the listing is in blue on blue, for example, press CTRL 2 to change the cursor to white, then make your corrections. The changes will stand out on the screen, making it easy to see the results of your work.

Meredith Jones Frummer
Riverdale, NY

\$1A0 Magic color change—The following short subroutine will display what you type in green, except for letters of the alphabet, which will appear in red. Commodore 64 users might want to enter POKE 53281,1 first, to get a white screen.

```

10 GET A$:IF A$="" THEN 10
20 PRINT CHR$(28-2*(ASC(A$)<65)OR(ASC(A$)>90))A$:GOTO 10

```

Marilyn Sallee
Alliance, NE

Software Guide
To Word Processing

The Home User's Guide to Commodore Computing

RUN

U.S.A. \$2.95
Canada \$3.50
A CWC/I Publication
March 1985

EXERCISE!

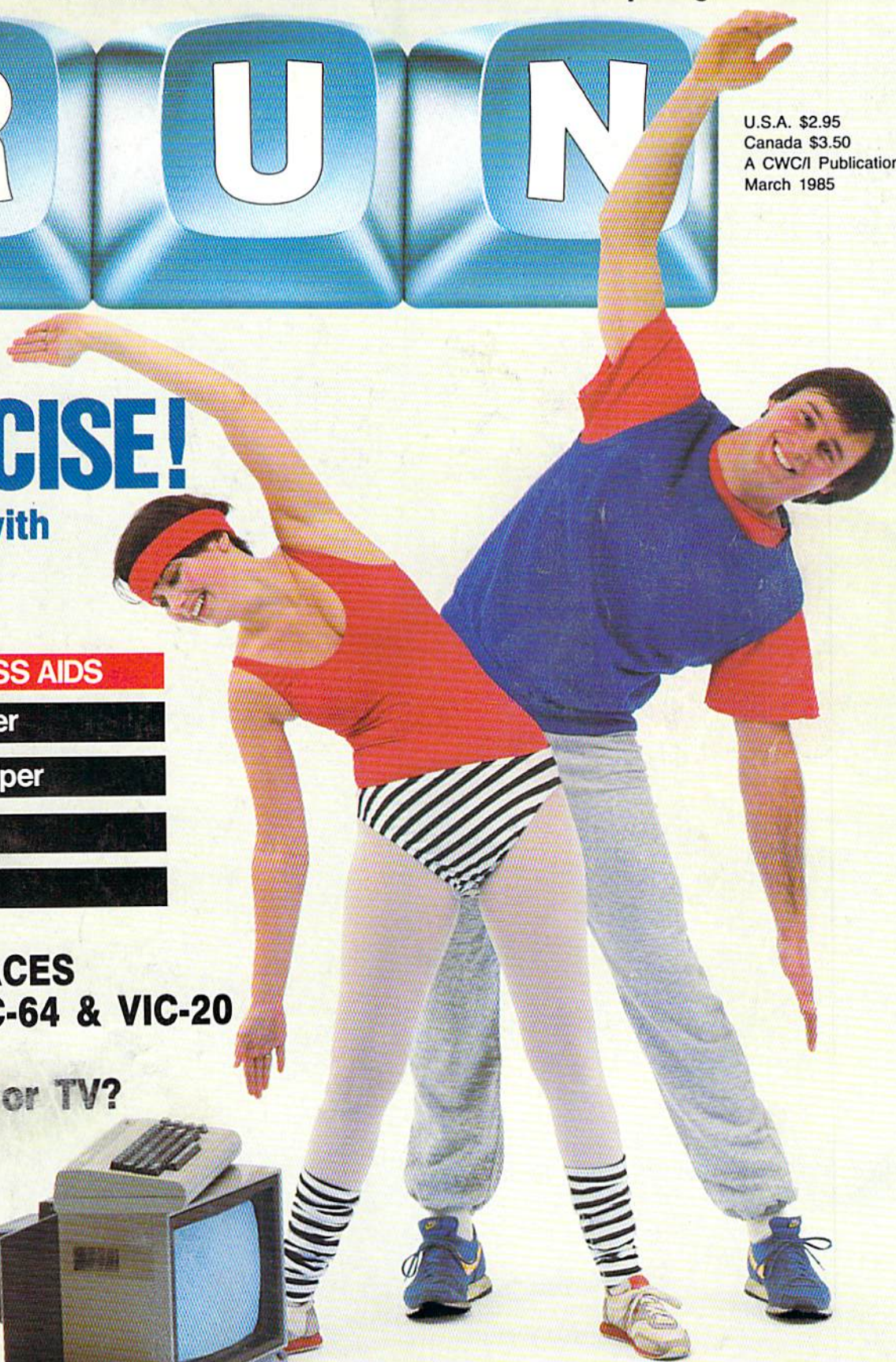
Shape Up with
Your C-64

HOME BUSINESS AIDS

- Money Manager
- Landlord's Helper
- Easy Invoices
- Mini-Calc

MAKING FACES
With Your C-64 & VIC-20

MONITORS or TV?
See the
Difference





Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun. MAGIC is doing what cannot be done.

Every month, Magic brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). We pay up to \$50 for each original trick we print. Send your tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a Trick Writer's Guide.

There's some great magic here for you this month, whether your interest is in disk drives, printers, programming, or just in typing in a program to see what it does. As always, we match our subject matter to the interest expressed in our mail, and, basically, that's a broad cross section of computing. We think of our contributors as the most creative souls in computerdom, and month after month they prove us right. Since our contributors and readers are one and the same, that puts you in very good company. Behold what your colleagues have wrought:

\$1A5 C-64 wedge feature—Commodore's famous wedge program contains a not-so-famous way of organizing files on the disk. When using the wedge to save, if you end your filename with a single character enclosed in square brackets, that character will magically be moved to the sixteenth position in the filename!

In wedge jargon, that sixteenth character is called the volume identifier. If you save several files with the same volume ID, the wedge will let you access them as a group.

If you're saving without the wedge, you can manually put a volume identifier in the sixteenth position of your filename, so you can use it later on.

To use the volume identifier, you must be running the wedge, and you can use any wedge command,

including @COPY, @RENAME, @SCRATCH and especially @\$. The wedge looks for the last character in each filename when you specify a volume ID between the square brackets. For example, you can save a file by entering:

```
{LEFT ARROW}HOUDINI[L]
```

It will list in the directory as

```
HOUDINI {8 spaces} L
```

and can be scratched with:

```
@S:HOUDINI[L] {return}
```

To get a directory of all files with volume identifier L, use:

```
@$:[L] {return}
```

You can scratch all the files with volume identifier L by using

```
@S:[L] {return}
```

Beware: The dark side of this magic is that the wedge will report the sixteenth character of the filename as the volume ID, whether it is intended as such or not. Make your IDs unique (graphics characters, for instance) and this should be no problem.

Matthew J. McCaffrey
Groton, CT

\$1A6 Comma files on disk—When experimenting with disk files, simple program errors often cause difficulties with filenames. Sometimes, a file named “,” pops up, which resists all efforts to be killed or renamed. When this happens, just search your directory for any other files with single-character names, then give them longer ones.

When the comma file is the only single-character name on the disk, it can be scratched or renamed by using the filename “?”. The wild-card character (the ?) will match the comma and allow you to do as you wish. After the comma file has been disposed of, you can give the others their original one-character names.

Craig Brookes
Joondanna, Western Australia
(Home of the America's Cup)

\$1A7 Dry disk storage—High humidity can cause loading problems when the felt inside your disk becomes slightly damp. You can reduce the problem by storing your disks with a desiccant capsule, such as those packed with vitamin pills. If you don't use vitamins, ask your druggist to give you a desiccant capsule.

Judith C. Fiore
Cleveland Heights, OH

\$1A8 Controlling tape errors—If you're working on a program and save it to tape several times with the same name, you could be asking for trouble. When you try to load it, the computer might find an old cut-off version under the same name and give you a Load error. You can usually find the "lost" beginning of your program, but it will take you several attempts. A better solution is to use a different name each time you save a version of the program.

Julie Rhodes
Columbus, OH

\$1A9 Plus/4 screen Pokes—On the C-64, screen memory starts at 1024, and color memory starts at 55296. On the new Plus/4, screen memory starts at 3072, and color memory starts at 2048. When converting C-64 programs to work on the Plus/4, just add 2048 to C-64 screen Poke locations and subtract 53248 from the C-64 color Poke locations. For example, on the C-64,

POKE 1524,1 (letter 'A' in center screen)

POKE 55796,2 (makes it red)

would convert to this on the Plus/4:

POKE 3572,1 (3572 = 1524 + 2048)

POKE 2548,2 (2548 = 55796 - 53248)

The screen map for the C-64 is on page 382 of the *C-64 Programmer's Reference Guide*. The map for the Plus/4 is on page 199 of the user's manual that comes with the computer. (The Plus/4's luminance feature may make it necessary to also change the value Poked to color memory. Ed.)

Kenneth H. Hottes
Danbury, CT

\$1AA Plus/4 and C-16 tips—(Untested. Ed.) To disable the stop key, enter POKE 806,103. Return to normal by entering POKE 806,101. Unlike the 64, all keys repeat on the new machines. To emulate the 64, with only cursor keys, insert/delete and space repeating, enter POKE 1344,0. Return to flying text by entering POKE 1344,128.

Empty the keyboard buffer with POKE 239,0. Key-presses are detected at memory location 2038, much as they are in the C-64 and VIC in location 197. The values returned are generally the same as those for the 64 (see trick \$3E, in *RUN's* April 1984 issue, or run

the following program and press some keys).

```
10 GETKEY A$: PRINT A$
20 PRINT PEEK(2038) : GOTO 10
```

Wayne Arnett
Chandler, AZ

\$1AB RUNDY—Have you ever typed in RUN over READY? If you have, the computer probably printed the familiar Undef'd Statement error. But if your program starts with line number zero, it will run no matter what follows RUN on the screen.

Tim Brugman
Fullerton, CA

\$1AC Improved reverse characters—After typing CTRL 9, type in some words and look closely at them. The uppercase characters are not completely surrounded by reverse video, so they look cut off at the top. They will take on a more professional look if you put a row of COMD@ characters, CHR\$(164), just above the reverse characters needing the improvement.

Perfectly Clear
Honolulu, HI

\$1AD Centered printing—Trick \$7F in June's *RUN* can also be accomplished using a function instead of a subroutine. You can center A\$ on the screen as follows.

```
100 DEF FNC(X) = 20 - (LEN(A$)/2)
110 More program lines, if desired
120 Etc.
700 A$ = "PRESTIDIGITATION" : PRINT TAB(FNC(X));A$
710 A$ = "IS" : PRINT TAB(FNC(X));A$
720 A$ = "PLEASURABLE!" : PRINT TAB(FNC(X));A$
```

The X is a dummy argument, not used, but required to avoid a Syntax error. For the VIC, use 11 rather than 20 in line 100.

Carol A. Sowle
Fort Wayne, IN

\$1AE Magic flasher—This subroutine can make all or part of your screen prompt flash on and off. It adds a little class and pizzazz, with very little effort.

```
500 REM ** MAGIC FLASHER **
510 PRINT "PRESS RETURN {CTRL RVS OFF} TO
    CONTINUE"
520 PRINT "{2 CRSR UP}": IF PEEK(162)AND32 THEN PRINT
    "{CTRL RVS}";
530 GET A$: IF A$ = "" THEN 510
540 PRINT "{CTRL RVS OFF}": RETURN
```

A Gosub 500 will put the prompt on the screen, with the first two words flashing. The rate of flash is set by Peeking a bit in the real time clock. For a faster rate, replace the 32 in line 520 with a 1, 2, 4, 8 or 16. For a slower rate, use 64 or 128. Moving the RVS OFF

From p. 12.

character in line 510 will change the amount of the prompt that flashes. Once any key is pressed, the sub-routine returns with A\$ equal to the character that was entered.

Frank C. Gutowski
Cheswick, PA

\$1AF Customized Ready prompt—We have changed the C-64 operating system, so that instead of the Ready prompt, a customized message will appear. To do this, lines 10–20 transfer the basic operating system to RAM. Line 30 causes the Ready prompt to be looked for at memory location 828 rather than its usual place. Lines 40–60 put the new prompt into locations 828 on up.

```
10 FOR J = 40960 TO 49151 : POKE J, PEEK(J) : NEXT
20 POKE 1, PEEK(1) AND 254
30 POKE 42101, 60 : POKE 42103, 3
40 FOR J = 0 TO 33 : READ K : POKE J + 828, K : NEXT
50 DATA 013,010,087,072,065,084,032,083
60 DATA 072,079,085,076,068,032,073,032
70 DATA 068,079,032,078,079,087,044,032
80 DATA 077,065,083,084,069,082,063,013
90 DATA 010,000
```

If you put this routine at the beginning of some of your programs, you can have a lot of fun. Line 10 takes some time to do its work, but the results are worth it.

Those who know about CHR\$ codes can construct their own message by changing the Data statements shown here. The first two and the last three must always be as shown, but you can put any reasonable number of characters in between. The possibilities are limitless, and a lot of action can be had from very little work.

Brian Axford
Petawawa, Ontario
Canada

\$1B0 Word tricks—It's well known that shifted characters in REM statements can List in unusual ways. Having considered this quirk at length, we've created a brand-new literary form. If you run the program below, you'll see just what we mean.

When typing it, be extremely careful with the characters in the answers; a single error can ruin the entire line. In the answer lines, we've spelled out every character following the colons, since that is the most critical area. As you type, don't put spaces where they're not called for, and carefully watch your shift and Commodore keys. In the answers, all the spaces and a few of the letters are unshifted.

After typing the program, you should save it first, then run it and follow the instructions. The quotes to be deleted are those at the beginning of the answer lines.

```
100 LIST
110 REM ** COMPUTER MAGIC & TRIVIA **
120 REM
130 REM THINK OF YOUR ANSWERS,
140 REM THEN DELETE THE QUOTES
150 REM AND RE-LIST THE PROGRAM.
160 REM
```

```
170 REM Q: WHY DID THE COWARDLY LION
180 REM VISIT THE WIZARD OF OZ?
190 REM " A: {2 SPACES}{COMD @}{SPACE}{SHIFT X}
{SPACE}{SHIFT E}{COMD A}
200 REM
210 REM Q: WHO EXPOSED THE WIZARD?
220 REM " A: {2 SPACES}{COMD @}{COMD @}
230 REM
240 REM Q: WHAT DID THE WIZ SAY THEN?
250 REM " A: {2 SPACES}{COMD LB.}{SPACE}{COMD @}
{SPACE}{SHIFT B}
260 REM
270 REM Q: WHAT CAN A GOOD WITCH DO
280 REM WITH A SPORTS BROOM?
290 REM " A: {2 SPACES}{COMD -}{SPACE}{SHIFT -}
{SPACE}A{SPACE}{SHIFT R} E.
```

Louis F. Sander
Pittsburgh, PA

\$1B1 Word trick contest—If you liked the trick above, develop something similar and send it in to Magic. We'll print the best submissions, and we'll pay at our usual rates. Include the plain-text listing as well as the REM-coded form, so we can see the result without typing.

The Question-and-Answer format has lots of possibilities, as the following lines will show, but it's far from the only style. We're looking for creative use of the shifted character principle—give it any form you'd like, and send us your best results.

```
10 REM Q: WHAT DID MRS. FLINTSTONE
20 REM SAY WHEN THE FIRE WENT OUT?
30 REM " A: {2 SPACES}{COMD U}D, {SPACE}{SHIFT K}
{SPACE}{COMD K}{SPACE}A {SPACE}{COMD
C}
40 REM
50 REM Q: WHY DO LEONARD AND VALERIE
60 REM GET A'S IN COMPUTER CLASS?
70 REM " A: {2 SPACES}{SHIFT C}{SPACE}{COMD P}
{SPACE}{SHIFT E}{SPACE}{SHIFT S}{SPACE}
{SHIFT V}
```

L.F.S.

\$1B2 Defining variables—It is sometimes desirable to define Basic variables in a certain order, particularly where execution speed is critical, and we want frequently used variables to be at the top of the heap.

To accomplish this, it is not necessary to assign a value to each variable, as most programs do. Commodore Basic allows you to establish variables in order, each with a value of 0, by using the DIM statement:

```
DIM X,Y,Z,A,P1,P2
```

Although the manuals make no reference to this use, the DIM command is not restricted just to array variables.

I. Adam
Vancouver, BC

\$1B3 Random numbers, all different—This routine generates a series of random numbers, of which no two are the same. It is perfect for programs

involving decks of cards or for lottery-type programs where the restrictions do not allow for duplication. The number of elements to be selected from is A; to choose numbers ranging from 1 to 40, set A = 40. The number of selections to make is B; to draw six numbers, set B = 6.

```
20 N = 1 : DIM P(A)
25 X = INT(RND(0)*A + 1) : IF N > 1 THEN 200
30 P(N) = X : PRINT P(N) : N = N + 1
35 IF N = B + 1 THEN END
200 FOR M = 1 TO N : IF X = P(M) THEN 25
210 NEXT M : GOTO 30
```

Gene Majewski
Schiller Park, IL

\$1B4 Time format—The TI\$ variable is somewhat confusing, since it includes hours, minutes and seconds with no separators. Since TI\$ is a string variable, the string manipulation commands can be used to add a colon and drop off the seconds.

```
100 PRINT LEFT$(TI$,2) ":" MID$(TI$,3,2)
```

Mark Doble
Mons, Belgium

\$1B5 Data debugging—Sometimes when using a checksum program to assist in the correct entry of Data statements, you continue to get checksum errors even though the data items seem to be correct. In those cases, you probably have a punctuation error in your Data statements, such as a period instead of a comma, or an extra comma that adds a spurious zero to your data.

Marie E. Coon
Bothell, WA

\$1B6 Vanishing variables—Shift your computer into Lowercase mode, then type in the following program (you'll have to shift to get the uppercase letters).

```
10 DATA XYZend
20 N = 5
30 READ N$ : PRINT N,N$
```

Now run the program and observe that the computer ignores it completely. List the program, and notice that not much of it remains. The moral is to be cautious when typing in Lowercase mode, since your computer ignores shifted letters unless they are in quotes. Use only unshifted letters for commands and variables, or some very strange bugs may appear.

Marion Maddocks
Glenwood, IA

\$1B7 Warm/cold starts—The C-64 User's Guide gives the command SYS 64759 to reset the machine and clear its memory, or, in other words, to reset to a cold start. In reality, this command resets the machine to a warm start, or the same state it's in after

pushing the run/stop and restore keys. The default colors are returned, but your program stays in memory. The correct command for a cold start is SYS 64760.

Linda Zolinski
Milwaukee, WI

\$1B8 Better For...Next delay loops—

The following line is often used to wait until a key is pressed or a certain time has passed.

```
100 FOR T = 1 TO 2000 : GET A$ : IF A$ = "" THEN NEXT
110 Continuation of program
```

The above method usually works fine, but it includes a potentially fatal bug, since it can exit the For...Next loop without executing the Next. When such an exit is made, the computer's stack pointer is not restored to its proper value, and the chance of an Out Of Memory error is greatly increased. It is better to use something like this:

```
100 FOR T = 1 TO 500 : T = T + (500 - T)*PEEK(198) : NEXT :
POKE 198,0
110 Continuation of program
```

Location 198 contains the number of entries in the keyboard buffer. When no key is pressed, the loop sets T = T, then increments T; it finishes as soon as T = 500. As soon as a key is pressed, PEEK(198) = 1, setting T = 500. The loop is satisfied without corrupting the stack pointer.

If you begin line 100 with POKE 198,0 you will clear any previous keypresses before starting the delay loop. If you want to have the loop exit only when a certain key is pressed, you can do this:

```
100 FOR T = 1 TO 500 : T = T - (500 - T)*(PEEK(197) = X) : NEXT
: POKE 198,0
110 Continuation of program
```

In this line, X would equal the value for the desired key as determined by the keyboard matrix table. You can find the value for the key you want by running this:

```
1 PRINT PEEK(197) : GOTO 1
```

When you press the key of interest, its matrix value will appear on the screen. This is the value you should substitute for X.

Katherine Myers
Fresno, CA

\$1B9 Longer shortcut?—Using Boolean expressions to condense a series of If...Then statements into one ON statement may seem shorter and faster, but it is not! For example, the series

```
5 IF A = 1 THEN 500
6 IF A = 2 THEN 600
7 IF A = 3 THEN 700
```

is written in Boolean as:

```
5 ON -(A = 1) - 2*(A = 2) - 3*(A = 3) GOTO 500,600,700
```

It looks shorter and faster, but the three If...Then lines take up 27 bytes as tokens, and the ON statement takes 36 bytes. Also, the If...Then series is evaluated faster be-

cause the Boolean statement has to do all the arithmetic involved as well as just evaluate the expression.

**Marilyn Sallee
Alliance, NE**

\$1BA To float or not to float—Does a floating-point variable or integer variable use less memory? Each side has its advocates, but the real answer asks another question first—how is the number used? As a single variable, such as a simple counter, using I is shorter than I% by the one byte needed to type the %. Otherwise, they use exactly the same amount of memory. However, if you use an integer array, then I%(J) will use much less memory than storing the same numbers in array I(J) because the computer stores integer arrays more compactly.

**Marilyn Sallee
Alliance, NE**

\$1BB Bad spelling—(See trick \$1B0.)

```
300 REM Q: NAME DOROTHY'S CAPITAL
310 REM " A: {2 SPACES}{COMD @}{SHIFT B} A
```

**Leonard Pith-Garnell
New York, NY**

\$1BC Paper saver—You can save paper by saving your old program listings and so on. When you need to print something for your own use, use the reverse side of these discarded listings. This has worked well for me, especially with the higher quality paper.

**Mary Brigito
Old Forge, NY**

\$1BD Open command glitch—Any time the Open command is used with device number 2, all variables and arrays are cleared. Device number 2 is reserved for RS-232 devices, and activating it makes some internal changes to prepare for RS-232. Whether or not you have an RS-232 device connected, OPENx,2,y will clear all your variables. Therefore, be very careful about using device number 2 at any time. If you're writing a program involving an RS-232 device, be sure to open your channel before setting any critical variables.

**Heather Albright
Ventura, CA**

\$1BE 1526 print sizes—Since printer manuals are hard for beginners to understand, many owners of Commodore's 1526 may not be aware that there are actually four sizes of print available. There is the regular size, plus three horizontally expanded fonts. The program below illustrates them very nicely.

```
2 A$=CHR$(14)
4 OPEN4,4
6 PRINT#4,"THIS IS REGULAR PRINT"
```

```
8 PRINT#4,CHR$(13)
10 PRINT#4,A$;"THIS IS ENHANCED PRINT"
12 PRINT#4,CHR$(13)
14 PRINT#4,A$;A$;"GETTING BIGGER"
16 PRINT#4,CHR$(13)
18 PRINT#4,A$;A$;A$;"LARGEST!"
20 PRINT#4,CHR$(13)
22 CLOSE4
```

**Gregory L. Bues
Milford, CT**

\$1BF Better printed listings—Commodore's 1526 printer has a little-understood paging mode that allows it to skip over the perforations between sheets of paper. With very little effort, you can use this feature to get nice top and bottom margins on your multiple listings.

To try it out, put a long Basic program in memory—one that takes more than a page to list on the printer. Align the paper in your printer so the top of the sheet is just barely under the two black rollers on the movable paper bail, and enter the following line in Direct mode. The title can be anything at all and, if you'd like, can be omitted.

```
OPEN4,4:CMD4,"{SHIFT CLR}TITLE":LIST
```

Then watch as your printer makes a professional-quality listing. When the listing stops, don't advance the paper by hand. Instead, enter, in Direct mode:

```
PRINT#4,"{HOME}":CLOSE4
```

You'll see the paper advance so the bottom perforation is right at the tear-off point on the silver bar that covers the platen.

You can add the following lines to any program, and a GOTO 10000 will get you a similar listing, but with a customized heading for the date or anything else you'd like. When the listing is finished, your cursor will be positioned so you can feed your sheet just by pressing the return key.

```
10000 REM ** LIST ON 1526 PRINTER - PERFS AT ROLLERS
10010 INPUT"HEADING";A$
10020 PRINT"{SHIFT CLR}{CRSR DN}PRINTCHR$(19):;
PRINT#4:CLOSE4{2 CRSR UPS}":OPEN4,
4:CMD4:PRINT"{SHIFT CLR}"A$:LIST
```

Remember, a question mark *cannot* be used in abbreviating the Print# statement.

**Louis F. Sander
Pittsburgh, PA**

\$1C0 Proofreading tip—After you've typed in a program from a magazine, it's often necessary to proofread your work. This job can be made easier by listing your program onto the printer, then proofreading the printout against the original copy. Compared to reading the screen, reading the printout is easy on the eyes, and it's much easier to find errors. This method is also timesaving, since you don't have to keep listing to the screen.

**Robertta Roberts
Chesapeake, VA**

The Home User's Guide to Commodore Computing

RUN

U.S.A. \$2.95
CANADA \$3.50
A CWC/I Publication
April 1985

UNIQUE CREATIONS FOR YOUR COMMODORE

Computerized Sundial
Biorhythms
Celestial Swami

The Pros and Cons
Of SIMONS' BASIC

LET IT SCROLL
On Your C-64 and VIC-20



A Beginner's Guide to Assembly Language



Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun. MAGIC is doing what cannot be done.

MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Every month, Magic brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). We typically pay \$10 for each trick accepted. Really super ones get \$20 or more. Send your tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a Trick Writer's Guide.

This month's Magic will be especially useful for typing in programs and working with disk drives. But no matter what your interest, our *juju* bag surely has something you can use.

\$1C1 April Fool's program—When he's not looking, run this on a friend's VIC or C-64. Then get him to type a line or two, and watch the fun as he scrambles for his warranty.

```
10 POKE207,0:POKE204,0:WAIT198,1:GETA$:PRINT  
" {CTRL RVS OFF}"CHR$(ASC(A$)+1.1*RND(0));GOTO 10
```

Don't forget the semicolon after the Print statement. Add to the fun by entering POKE808,225 (for the VIC, POKE808,100) before you run the program. (It disables the Stop, Restore and List commands.)

People have become famous by running this program at school or on machines displayed in stores.

Larson E. Rapp
Newington, CT

\$1C2 Linefeed fix—Commodore computers are subject to an occasional but maddening malady, where the cursor refuses to linefeed when the return key is pressed. It will jump to the end of the current line, but will refuse to go any further. The problem usually arises when hardcopy printing is aborted by the stop key or some other non-standard means.

Pressing the shift key along with the return key will move the cursor to the start of the next screen line. Then, typing a letter or two and pressing the return key will cause a Syntax error, which will end the linefeed problem.

At this point, there is probably some garbage in your printer's buffer. Give it something unimportant to print, and the buffer will clear itself.

Beldare Lecone
Remulac, France

\$1C3 SX-64 printer interface—As most owners know, the SX-64 has no cassette port from which to pick up +5 volts for the popular Cardco +G printer interface. Not so many people know that on most printers with a Centronics interface, pin 18 of the printer connector is a source of +5 volts. That is the case on my Panasonic KX-P1091 printer, and I took advantage of it by making an easy modification to my Cardco.

I opened up the Cardco +G, cut the white 5-volt power wire that went to the cassette connector and resoldered it to pin 18 of the printer connector. This arrangement has worked for over six months without any sort of problem. My Cardco warranty is probably void, but at least I'm able to use my printer.

T.V. Dinsmore
Knoxville, TN

\$1C4 Magazine hacking—Whenever my magazines arrive, I go through each with a colored marker in hand, usually a translucent yellow one. I circle small

items of special interest to me, such as interesting Magic tricks. I scan each article briefly, and if it appears to be of interest, I circle its listing in the Table of Contents. For advertising, I circle items I'm interested in, then put a line through their listings on the advertiser's page in the back. I also circle the number on the page of the ad itself so it stands out when I flip through. Later, I make up a card file on articles and so on. When my disk drive operates properly, I will set up disk files to replace the cards.

D.G. Munoz
Dania, FL

\$1C5 Bookwork—After working with my system for several months, I found myself returning again and again to the same few pages and tables in my computer's reference guide. To make things easier, I copied my most frequently used pages and glued them to different-colored sheets of construction paper. Now I have a series of easy-to-find color-coded reference cards with all the sprite information, ASCII codes and other functional charts as needed. What a time saver it has been for me!

Mrs. Ruth A. Hicks
Oak Run, CA

\$1C6 Magazine work—Every computer magazine has its own system of listing programs, and there's little standardization in the symbols they use for cursor and other special characters. You can make your life easier by copying the "how to type in listings" sections from each of your favorite magazines, then pasting them all onto an 8½ × 11-inch card. If you keep the card close by, you can use it as a handy reference when typing in programs.

Deb Sullivan
Pittsfield, MA

\$1C7 Musical stitchery typing tip—As an aid in typing programs, my husband and I have combined equipment from two other hobbies, music and cross-stitch. A music stand allows us to easily adjust the height of our material. To keep our place while typing, we use the metal sheet and magnetized strips that are sold as place holders for cross-stitch patterns. With the metal sheet behind the page we're working on, we slide the magnetized strip under the lines being typed. One word of warning: The magnetized strips can be disastrous to disks and tapes, so keep them away from your magnetic media.

Barbara Eberly
Cullowhee, NC

\$1C8 Program placekeeping—When typing in long programs, use a hi-liter marker to record your progress. These markers are available in transparent pastel colors in any stationery department. Every five lines

or so, cross off the completed material with your marker. This is also a good method to use when checking for typing mistakes.

Ellen Pekar
Florence, MA

\$1C9 Magazine magnifier—I went to a store where needlepoint and embroidery notions are sold, and I bought a line magnifier, made for use with sewing instructions. It works quite nicely in magnifying the program lines as I type in goodies from *RUN*.

Mildred Carroll
Rosedale, NY

\$1CA Keyboard overlays—When using complex programs like Easy Script and Simons' Basic, the function keys, and usually others, have many hard-to-remember purposes. Cardboard overlays for your keyboard can make it easier to use these programs.

Get pieces of thin cardboard from a stationery store or shirt laundry, then measure the dimensions of your computer and its keyboard area. Cut the cardboard to fit your computer, then cut out places for the keyboard areas. When you put the overlay in place, your keys will be surrounded by cardboard on which you can write the instructions appropriate to your program. If you own several complex programs, it's easy to make an overlay for each.

Mary D. Brigito
Old Forge, NY

\$1CB Escape literature—Many printers require the ASCII escape character, CHR\$(27), to be sent as part of various control sequences. Commodore computers don't have an escape key, and there's nothing in the documentation to show how one can be rigged. Fortunately, the matter is easily resolved, since pressing {CTRL : } generates an escape character.

If the computer is in Quote mode, a reverse-field left bracket will come up on the screen, and when that character is printed, the escape code will be sent. If your printer is open to file #4, an escape can be sent to it by entering:

PRINT #4,"{CTRL : }"

Of course, {CTRL : } means to hold down the control key, then hit the colon.

Mrs. Deane Maddocks
Glenwood, IA

\$1CC Easy GO testing—When testing a program that uses On...Go commands, or perhaps computed Goto's, it's useful to establish dummy lines as the targets for those commands, so you can get easy proof that the program is going where you want it to. Once you have that proof, you can replace the dummies with more interesting sections of code.

Continued on p. 106.

From p. 10.

The ideal dummy line would be easy to type in, easy to replicate with various line numbers and would be self-documenting when executed. After years of looking, I finally found it:

```
1200 STOP:RETURN
```

When executed, this line will cause a Break In XXX message, where XXX is whatever line number you've given it. When you then enter CONT, the program will return from the subroutine. Of course, if you've used a Goto rather than a GOSUB command, you don't need the Return command in your dummy line.

Louis F. Sander
Pittsburgh, PA

\$1CD Calculated Goto command—On the C-64, you can use this one-liner to jump to any calculated line number within your program. Simply set the variable GL to the desired line number, then enter GOTO 1000.

```
1000 POKE 785,188 : POKE 786,168 : POKE GL,PEEK(GL) :  
      GL=USR(0)
```

It may not look like it, but believe me, it works! [Yes, it does! Ed.]

Randy Thompson
Eugene, OR

\$1CE Shifted REMs—If you put a shifted letter inside a REM statement, the computer will interpret it as a Basic keyword when it is listed. (The same is true of the graphics characters created by the Commodore key.)

A shifted L in any REM statement will cause a Syntax error if the computer tries to list it. REM followed by an alternating series of shifted V's and unshifted spaces will commemorate nylon stockings, the Olympics and an equally famous fountain of knowledge. Replacing the shifted V's with shifted S's will show what you do with the latter.

When shifted or Commodore key characters follow a quotation mark, they list as themselves rather than as Basic keywords. So, if you *must* use shifted characters in your REM statements, precede them by a quotation mark.

Ellen Pekar
Florence, MA

\$1CF Word trick contest—Last month, we announced a contest based on the principle described above. This month's grand prize entry is:

```
10 LIST  
20 REM Q: HOW FAR IS IT FROM THE TOP  
21 REM OF THE EMPIRE STATE  
22 REM BUILDING TO THE BOTTOM?
```

Circle 137 on Reader Service card.

Dreams CAN come true!

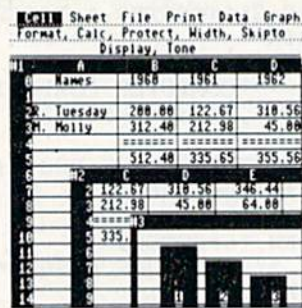
Back in June of 1983, Kelvin Lacy had a dream. He dreamed of creating one integrated program that would include a spreadsheet, business graphics and a database. A program with the power of Lotus 1-2-3. On the Commodore 64. People laughed! He had just finished OmniWriter, to be marketed by HESWARE. Ignoring the skeptical, he started on VIZASTAR.

Now, after 15 months, his dream has come true. VIZASTAR has a full-featured spreadsheet, as good as Multiplan. But much faster—faster than many spreadsheets on the IBM PC! It is written 100% in 6502 machine language code and is ALWAYS in memory. It is menu-driven, using the latest techniques in user-friendliness. It is compatible with virtually all printers and word processors. Up to 9 windows can be open simultaneously, anywhere. Remarkably, 10K of memory is available for spreadsheet use.

The database is equally impressive. Create file layouts by simply painting a picture of the layout on up to 9 screens, showing where a field starts and ends; VIZASTAR does the rest.

Imagine the power of a spreadsheet integrated with a database. Now add graphics — bar, line, and multi-color pie and 3-D "skyscraper" graphs. You could access a customer's profile in the database, transfer the data to the worksheet, and let it calculate discounts, sales tax etc. and then transfer the updated data back to the database. Open up a window anywhere and display a graph of your data, instantly. This integration is the key to VIZASTAR's power—the **first and only** program of this kind on the C-64. All commands can be automated, so you can "program" your own applications and run them with one keystroke.

Trademarks: Lotus 1-2-3/Lotus Development. Commodore 64/Commodore Electronics Ltd. Multiplan/Microsoft.



Actual screen dump printed by VIZASTAR

VIZASTAR includes a cartridge, a 1541 diskette with a backup, reference and tutorial manuals. VIZASTAR is **ONLY \$119.97**. We are so positive you will be delighted with VIZASTAR that we offer a **15day money-back** guarantee. Try it risk-free! Compare VIZASTAR with any other spreadsheet or database.

So order today. Call or send a check or Money Order. Calif. residents add 6.5% sales tax. MC/VISA accepted. Add P&H: UPS—\$3; COD, Canada—\$6

SOLID STATE SOFTWARE

1125 E. Hillsdale Blvd., Suite 104
Foster City, CA 94404-1609

(415) 341-5606

Dealer Inquiries Welcome


```
30 INPUT "{SHIFT CLR} MESSAGE";MES
40 PRINT "{SHIFT CLR}"; FOR J=5 TO 1 STEP -1 : PRINT
   "{HOME}";AS(J);MES : FOR K=1 TO 95 : NEXT : NEXT
50 FOR J=1 TO 5 : PRINT "{HOME}";AS(J);MES : FOR K=1 TO 95
   : NEXT : NEXT : PRINT AS(1)
```

Greg Burns
Address unknown

\$1D3 Disk wedge tip—Wedge commands can be used from within Basic programs, as long as the proper syntax is used. The @, >, !, % or up-arrow symbol must be the first character in the statement, with no quotes around it. The rest of the command must be enclosed in quotes. The following routine, for example, will put a directory on the screen, read the error channel, print a message, then load a program.

```
200 @ "$"
210 @
220 PRINT "WIZARDRY, INDEED!"
230 / "THE LAND OF OZ"
```

With normal Program mode loads, you must be concerned about program length; with this one, you don't. The technique has worked with every wedge command we've tried it on.

Arnie Lee
Abacus Software

\$1D4 Shifted spaces in filenames—

Things would be easier if all disk files had short names—like M1 instead of MONITOR.49152, for example. But how do you remember the meaning of M1? If you save or rename a file using a shifted space inside the name, you can use its left portion (before that shifted space) as a normal name, while the rest of it may be treated as a comment. If you save a program as

```
"M1{shift space}MONITOR.49152"
```

the directory will list it as

```
"M1"MONITOR.49152
```

From then on, you will be able to treat it as just "M1." If you forget, just list the directory and see the whole name. Incidentally, the DOS still considers the entire name, so these two files can coexist with no problems:

```
"M1"MONITOR.49152
```

```
"M1"MONITOR.51111
```

This is not any convenience, however, since any command aimed at "M1" will affect only the one that appears first in the directory.

Carlos A.G. de Figueiredo
Sao Paulo, Brazil

\$1D5 Easy load filenames—

If you load programs by typing on top of a directory listed to the screen, the easy part is typing the word LOAD on top of the number of blocks to the left of the filename. It's somewhat harder to move the cursor past the filename in order to type ,8,1 or ,8: (either the ,1 or the colon removes the need to erase the PRG).

It is generally known that messages may be embedded to the right of the filename, just past the second question mark, by renaming the file and using a shifted space to separate the filename from the message. If we could put a ,8,1 message in the filename like that, we'd make it a lot easier to load the program from its directory listing. Unfortunately, the drive will not accept a comma when it renames a file.

But there is a way to put a comma there. Instead of using a comma, use a Commodore-D, the little block character that the D key makes when pressed with the Commodore key. The disk drive will accept this character, and the new directory will print it out as a comma!

For example, to embed the phrase ,8,1 after the filename MERLIN, just type the following.

```
OPEN 15,8,15 , "R:MERLIN{shift space}{COMD D}8{COMD D}
1 = MERLIN" : CLOSE 15
```

To put a colon in the filename, use the shifted @.

Doug Ferguson
Elida, OH

\$1D6 Disk de-banger—

When using copy-protected programs, the copy-protection scheme can create a lot of disk-head bumping, as evidenced by the 1541's machine-gun sound effects. The banging tends to knock

Circle 172 on Reader Service card.

FANTASTIC FILER

COPYRIGHT © 1984 BY DAVID M. SMITH

A SOPHISTICATED AND EASY TO USE FILE
MANAGEMENT SYSTEM FOR THE COMMODORE
64 AND 1541 DISK DRIVE. PACKAGE INCLUDES:

- 1) Complete Menu Driven sub-sections.
- 2) Simple One Stroke Key Commands
- 3) Free form record layout design to place data anywhere on the screen.
- 4) Maximum of 50 fields per record.
- 5) Maximum of 256 characters/record.
- 6) Average of 1000 records per disk.
- 7) Fast 3 second search using index match or specific search criteria on all field combinations.
- 8) Full arithmetic calculations between fields
- 9) Built in multifunction columnar report and mailing label generator.
- 10) Ability to create sequential disk sub files for merging data with popular word processors.
- 11) Complete and thorough users manual.

SO MUCH SOFTWARE
FOR ONLY \$29⁹⁵

All in all Fantastic Filer is a Fantastic Data Base Program at an even more Fantastic price. Why pay more for others when Fantastic Filer will fill your data base needs?



Available from:

Micro-W.
DISTRIBUTING, INC.

1342 B Route 23
Butler, N.J. 07405

Call: (201) 838-9027 To Order

drives out of alignment or to kill them before their time.

If you run the following program before loading any DOS-protected software, most of the banging will stop.

```
10 OPEN 15,8,15
20 PRINT#15,"M-W";CHR$(106)CHR$(0)CHR$(1)CHR$(133)
30 CLOSE 15
```

The de-banger will stay in effect until the drive is powered down.

Gilbert D. Helland
Scott AFB, IL

\$1D7 Directory trouble—I forgot to enter NEW after loading a disk directory, and after spending an hour typing in a program, I found I was in trouble. When the program was listed, the directory lines were interspersed with the program lines. Since the directory line "numbers," really the numbers of sectors, etc., were not in numerical sequence, they wouldn't erase in the usual way.

I solved the problem by renumbering the few program lines that were mixed in with the directory numbers and erasing the original program lines. When I relisted the program, all the directory lines appeared at the beginning, where they could easily be deleted by typing their numbers.

Richard L. Mitchell
Lafayette, LA

\$1D8 Loading machine language—The common way to load a machine language program from disk is:

```
LOAD "filename",8,1
```

It isn't widely known that *any* odd number can be used instead of the 1. I find it easier to use:

```
LOAD "filename",8,9
```

since the 9 is right next to the 8 on the keyboard.

Eric the Juggler
Squirrel Hill, PA

\$1D9 Loading "*"—When you enter LOAD "*",8 with your Commodore disk drive, you don't always get the first program on the disk. Usually, in fact, you get the last program you've accessed. To fix this, just insert a colon in front of the asterisk:

```
LOAD":*",8
```

This gives you the first program every time.

Brian Kennedy
Colorado Springs, CO

\$1DA Disk copying tip—When making a copy of disks, using the programs that require switching source and destination disks, it is a good idea to put a write-protect tab over the window of the source disk. It provides extra protection against accidental erasing of the source material.

Larry Thomas
Hooks, TX

WHATEVER HAPPENED TO FAY WRAY



Kong
should have
backed her up
with the NEW
Copy Q

In the software jungle,
no copy program for the Commodore 64™
works better or copies more at any price!
Copy Q is the fastest, most reliable, and easiest-to-use.
And **Copy Q** even comes with a backup!

The NEW **Copy Q** contains a TRUE INTELLIGENT NIBBLER which copies all the information on a disk and even the newest copy protection including half tracks, track 36+, varying data density, misordered and extra sectors, gap and sync tracks, and much more.

Copy Q is fully automatic. There are no parameters to set. You don't even need to swap disks when using two drives.

And **Copy Q** makes the FASTEST backups by using intelligent scanning, data compression, and super-fast data communication. Most disks are copied in just three minutes. And many disks that require extensive nibbling are copied in less than five minutes.

Copy Q contains other features found nowhere else: **Copy Q** revivifies disks rather than erasing them. **Copy Q** also contains a utility that automatically backs up any data disk and removes all data errors in just two minutes.

It's a software protection jungle and your data and program integrity are at stake. So don't monkey around with the others. You can climb straight to the top with the NEW **Copy Q** by Q-R & D.

Now only **\$39.95**
Seven day money back guaranteed.

Copy Q and other fine Q-R & D products are available at more than 300 dealers nationally. For the name of the dealer nearest you call:

612 831-1088

To Order Direct call:

612 922-0516



ONE WEST LAKE STREET, MINNEAPOLIS MN 55408 - 612 922-7628

Circle 188 on Reader Service card.

PSYCHOLOGICAL
SOFTWARE—
Does it Really Work?

The Home User's Guide to Commodore Computing

R U N

Bob Atkins

U.S.A. \$2.95
CANADA \$3.50
A CWC/I Publication
May 1985

Commodore's New 128!

Is It Really 64-Compatible?



THE DOMESTIC C-64:
*Household Inventory
Energy Watchdog
Shopper's Companion*

HOTLINE TO THE WORLD—
You're Only a Phone Call Away!

PUT THAT VIC TO WORK!



MAGIC



Compiled by LOUIS F. SANDER

**MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.**

Every month, Magic brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). We typically pay \$10 for each trick accepted. Really super ones get \$20–\$50. Send your tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a Trick Writer's Guide. International readers may omit the stamp.

Many have wondered if our box number is in binary, or if our ZIP code is octal or hex. The postmaster, unskilled in numerology, insists that they are decimal. But we are not so sure, and we are in a position to know. In any event, we savor the ambiguity, and we hope it pleases you—for Magicians, it's good when things are not quite what they seem.

\$1DB Glaring nerdhood—Don't have a glare screen for your monitor? Just wear polarized sunglasses whenever you're computing. Your family may think you're withdrawing further into the tube, but you're really just saving money.

Mike Rogalski
Monrovia, CA

\$1DC Program executable List—This lets you use the List command within a C-64 program, without halting the program's execution. Substitute line numbers for the Xs or leave them out entirely.

100 POKE 768,174 : POKE 769,167 : LIST XXXX – XXXX : POKE
768,139 : POKE 769,227

Randy Thompson
Eugene, OR

\$1DD C-16 and Plus/4 organ—Here's a rudimentary organ program for the new 3.5 Basic.

10 VOL 8 : A = PEEK(198) : IF A = 64 THEN 10 : ELSE A = A*15 :
SOUND 1,A,20 : SOUND 2,A,20 : GOTO 10

Jerry W. Jarvis
Spokane, WA

\$1DE C-16 tips—The Warm Start command is SYS 32768. This is similar to SYS 64738 on the C-64 and SYS 64802 on the VIC. When using the Else command, you must precede it with a colon. All in all, the Commodore 16 is a very nice little machine.

Bob Underdown
Fayetteville, AR

\$1DF Directory printer—This program loads and prints a disk directory, with no keyboard input from you.

100 PRINT " {SHIFT CLR} {3 CRSR DNs} LOAD" CHR\$(34) "\$"
CHR\$(34) ",8"
110 PRINT " {4 CRSR DNs} OPEN4,4:CMD4:LIST"
120 PRINT "PRINT#4:CLOSE4 {HOME}"
130 POKE 198,5 : FOR J = 1 TO 5 : POKE 630 + J,13 : NEXT : END

Alan Sperling, Esq.
Mount Lebanon, PA

\$1E0 Automatic appender—Use this program to append other ones, with no Direct mode Pokes to fool around with.

1 INPUT "PROGRAM TO APPEND";A\$: INPUT "DRIVE 8 OR 9";U
2 A = PEEK(44) : PRINT " {SHIFT CLR} {3 CRSR DNs} LOAD"
CHR\$(34) A\$ CHR\$(34) CHR\$(44) U CHR\$(141);
3 PRINT " {4 CRSR DNs} POKE 43,1 : POKE 44, " A " {HOME} "
4 POKE 632,13 : POKE 633,13 : POKE 634,13 : POKE 198,3
5 IF PEEK(45) < 2 THEN POKE 43,PEEK(45) – 2 + 255 : POKE
44,PEEK(46) – 1 : END
6 POKE 43,PEEK(45) – 2 : POKE 44,PEEK(46) : END

Make sure your disk has a copy of your main program and the programs you wish to append. Run this program, entering the name of your main program in response to the first prompt. (The first line number in the main program must be higher than 6.) Then enter the device number of the drive your disk is in.

To append to the main program, run the automatic appender again, this time answering the first prompt with the name of the next program to append. Its line numbers must all be higher than the last line number in the main program. You may continue to append as many programs as you wish, provided their line numbers are all higher than those in the program currently in memory.

When you've finished, remove lines 1-6, then save your combined programs.

Alan Leish
Address unknown

\$1E1 Debugging tip—Debugging a routine that follows several Input statements can be the ultimate in tedium, since you must make all the inputs each time you run the program. Avoid this useless repetition by temporarily changing the Input statements to Read statements, and providing data for them to read. For example, instead of

```
100 INPUT A,B,C
110 Rest of program
```

you can temporarily use

```
100 REM INPUT A,B,C
102 READ A,B,C : DATA 12,34,56
110 Rest of program
```

This will quickly get you into the more troublesome parts of your program.

Peter L. Rasco, Jr.
Address unknown

\$1E2 Programming tip—When developing a program, you can save time by making the last step a List rather than an End. Then when the program is run, you can see the results and easily make any needed changes. When the program is right, just change List to End, then save it.

John P. Oprea
Kirkland, WA

\$1E3 Simplest trace—Whenever the C-64 executes a SYS 48578, it prints the word IN and the line number in which the command appears. By including these SYS calls at various points in your program, you can find what has been executed and when. An even slicker method is to set T = 48578, and execute SYST any time you want to trace.

Dennis J. Spranger
Eland, WI

\$1E4 Named subroutines—They are easy. Just do this:

```
100 GOSUB 1000,SUBROUTINE NAME : Rest of line goes here
```

It works because, when Basic returns from the subroutine, it looks for the next colon or line number, ignoring the subroutine name. It's useful because it lets you put a remark inside a program line, while eliminating the need for the REM statement.

Richard Murray
Red Deer, Alberta
Canada

\$1E5 No-question-mark Input—Here's an easy way to get it:

```
10 POKE 631,154 : POKE 198,1 : INPUT "PROMPT {CTRL 7}";IN$
```

The {CTRL 7} changes the print color to dark blue, so the question mark, though printed, is invisible. The two Pokes put a light-blue character into the keyboard buffer, so your response to the prompt will be visible. If you aren't using these screen and print colors, change the {CTRL 7} and the CHR\$(154) to the appropriate values, found in your user's manual.

Steve Freedkin
East Lansing, MI

\$1E6 For...Next statements—These initialize the loop variable before they compute the loop's end. You can use this to your benefit, especially if you're working in Direct mode. Take, for instance, the clearing of C-64 color memory, where it's common to remember the start as 1024 + 54272:

```
FOR I = 1024 + 54272 TO 1024 + 54272 + 1024 : POKE I,PEEK(646)
: NEXT
```

can be shortened to

```
FOR I = 1024 + 54272 TO I + 1024 : POKE I,PEEK(646) : NEXT
```

Curtis Sieber
Somerville, AL

\$1E7 Program overlays—When the Load command is used in Program mode, the loaded program must be shorter than the one that loads it. As soon as it loads, the second program is automatically executed, and any variables set by the first program retain their values.

For string variables, however, things are not so simple. Their values will be lost unless the first program has concatenated them to something. If A\$ = "TEXT", just use A\$ = "TEXT" + "", and the necessary condition will have been met.

Reinhard Ruscher
Szekesfehervar, Hungary

\$1E8 Decimal flags—Here's an easy way to put six flags in one integer variable. It uses the first six prime numbers (2, 3, 5, 7, 11 and 13) as flags for six conditions. Multiply together the prime numbers corresponding to each "ON" condition, and put the result in an integer variable. For example, if conditions 3, 4 and

Continued on p. 103.

From p. 10.

6 are ON, the number is $5 \times 7 \times 13 = 455$. Set $X\% = 455$, and you can use statements like

```
101 IF X%/2 = INT(X%/2) THEN PRINT "CONDITION 1 IS ON"
102 IF X%/3 = INT(X%/3) THEN PRINT "CONDITION 2 IS ON"
103 IF X%/5 = INT(X%/5) THEN PRINT "CONDITION 3 IS ON"
104 Etc.
```

to determine which conditions are ON. This works because $X\%$ is evenly divisible by each of the prime numbers that were multiplied together to get $X\%$ in the first place, but is not evenly divisible by any other prime. The technique fails if $X\% = 0$.

David Hall
Saskatoon, Saskatchewan
Canada

\$1E9 Binary flags—Often when reading about programming, you see references to setting or clearing a certain bit (turning it on or off). Doing this is not difficult at all, once you know the magic. If the eight bits in a byte are numbered from 0 (low-order bit) through 7 (high-order bit), you can clear a single bit in memory location X by entering:

```
POKE X,PEEK(X) AND (255 - 2^bitnumber)
```

You can set a bit in location X by entering:

```
POKE X,PEEK(X) OR (2^bitnumber)
```

Robert Rovinsky
Duluth, MN

\$1EA Bug busters—The Save With Replace bug—does it exist, or doesn't it? Nobody knows for sure, but we're determined to find out. If you own a disk that's been slimed by SAVE@, we'd like to run it through our lab. Send the sick disk to Magic, with a description of what seems to be wrong. Tell us which file(s) got corrupted, and include a detailed history of the disk. If we examine enough disks, we're sure to see a pattern. When we do, the bug is doomed.

Send a label and return postage, and we'll send back your disk when we're done with it. Otherwise, we'll consider it your contribution to science and will dispose of it in a dignified and caring way.

SAVE@ problems only, please—we're *not* the Commodore Clinic.

L.F.S.

\$1EB Scintillating screenwork—This gives an especially interesting pattern on 40-column screens:

```
10 GET A$: PRINT A$ " see text "; : GOTO 10
```

Between the quotes, type the *shifted* letters DDCCFRF CCDDEE. Notice their nice grouping on the keyboard. Put your machine in Graphics mode, then run the program. You can change colors by pressing the Commodore key with one of the number keys.

Other interesting patterns can be made with these shifted letters, and {COMD Y} and {COMD P} can add to the fun. My best results came from strings 13, 14 or 19 characters long.

Eric Haver
Squirrel Hill, PA

\$1EC Screen layout aids—A 12-inch flexible steel ruler, of the type made by Bates and sold in office supply stores, makes a superb screen layout tool. Use the metric scale to measure CRT distances, and hi-res positioning will be easier than you've ever imagined.

To simplify the counting of text lines, draw a dot at the start of every fifth line on your screen, about 1 mm into the border. I use a Sharpie brand marker for permanence, and I make the dots as tiny as possible, to keep them from polluting the display.

Louis F. Sander
Pittsburgh, PA

\$1ED Vertical tabbing—You can easily have a vertical tab function, similar to Commodore's horizontal TAB, by using:

```
100 DIM VTAB$(25) : A$="{HOME}": VTAB$(0)=A$
110 FOR J=1 TO 25 : A$=A$+"{CRSR DN}":
    VTAB$(J)=A$ : NEXT
```

Then, if you enter PRINT VTAB\$(n), the cursor will move to the start of screen line n, in the same way that PRINT TAB(n) moves it to column n. As usual, the first line and column are numbered 0, rather than 1.

L.F.S.

\$1EE Magazine indexes—Some of the most useful information in the computer field is found in the back issues of magazines. A wonderful tool for finding it is the Microcomputer Index (2464 El Camino Real, Santa Clara, CA 95051; 408-984-1097). It's also available on-line through the Dialog information service (800-227-1927). Many libraries subscribe to this treasure trove of computeriana, and some will search Dialog for you.

Once you've determined where a piece was published, ask for it at the library or order the back issue from the publisher. If all else fails, try to get a microfilm, from which a hard copy can easily be made. University Microfilms (300 N. Zeeb Road, Ann Arbor, MI 48106; 800-521-0600) provides this type of service.

Frank Biondi
Pittsburgh, PA

\$1EF Computerease—In some computer publications, the space character is signified by *b*—a lowercase b with a slash through it. It's easier to see and count than an empty space, and the b is a mnemonic for blank.

Rula Lenska
New York, NY

\$1FO Junkyard computing—Every GM car contains lengths of plastic wire tubing, split lengthwise and used for harnessing cables. This material is excellent for wrapping the many loose wires coming out of your computer and is readily available in any automobile junkyard. There are two sizes of tubing in most cars; the larger one is best for most applications. I bought 50 cents worth,

buzz should disappear. Sometimes you can use just a plug, with nothing connected, and achieve the same effect.

Fred Lacey
Corvallis, OR

\$1F4 Printer cable hang-up

—Some sophisticated programs, especially those involving the disk drive, seem to be sensitive to the presence of other peripheral devices. I found several fast-copy programs that hung up the computer whenever a printer cable was connected. Disabling the printer didn't help—I had to physically remove the printer cable from the serial bus. If you have a similar problem, try removing the printer cable first, then look to the other ports for possible remedies: cassette port, user port, cartridge slot and, perhaps, even the joystick ports.

Karl Thurber, W8FX
Millbrook, AL

\$1F5 MPS-801 and labels—This printer can take a minimum of 4½-inch paper. Before buying labels to use with it, carefully check their width, since many are only 4¼ inches wide and cannot be used with the MPS-801.

James Llanos
Ketchikan, AK

\$1F6 Modem intercom—This little trick has helped solve many modem problems. If you have two computers and two modems, you can get them to talk to each other over two phones on one line in your home. With both ends of the link in one building, troubleshooting becomes a snap.

Simply pick up the phone and wait for the loud beeping to stop. It will take a minute or two, but it will eventually stop. Plug that phone into your modem (or switch from T to D if you have a 1650). Then pick up an extension phone and do the same for that. You should now be able to converse between two computers on a single line!

Mike Mann
New Smyrna Beach, FL

\$1F7 Beware of humidifiers—The new ultrasonic humidifiers can be hazardous to your computer's health. Some of the manufacturers are including a small warning that they may deposit harmful mineral films on disks and computer equipment. Unlike other humidifiers, which depend on evaporation and leave the minerals behind in the tank, these new ones physically spray the water—minerals and all—into the air. Distilled or specially filtered water is one solution to the problem.

Tom Grayczyk
Chicago, IL

\$1F8 Character codes—To get some experience with character codes on the C-64, try this recipe for Feminist's Delight:

```

5 POKE 53281,14:PRINT CHR$(19)CHR$(5)
10 X = X + 1:PRINT CHR$(18)CHR$(69)CHR$(82)CHR$(65)
  CHR$(146)CHR$(32);:IF X < 240 GOTO 10
20 GOTO 20

```

Elizabeth Oman
Lindsborg, KS

\$1F9 Answer screen—You can use the following line to acknowledge correct responses in educational programs. (To squeeze it into one line, you must abbreviate every Basic keyword.) It flashes the word “RIGHT!” in the center of a blank screen.

```
500 PRINT"{SHFT CLR}":FORX = 1TO12:PRINTTAB(17)
    "{10 CRSR DN$}RIGHT!":FORY = 1TO80:NEXT:PRINT
    "{SHFT CLR}":FORZ = 1TO80:NEXT:NEXT
```

It would be easy to use the line in a subroutine or to change the word it prints.

Marlene Dunn
Miami, FL

Circle 192 on Reader Service card.

See reviews in: RUM, Jan. 1983, p. 132;
Midnight Gazette #21, 1984, p. 49;
Ahoy! April 1985, p. 38

1541 PHYSICAL EXAM

\$39.95

**IS YOUR 1541 HEALTHY?
OR WOULD ITS PHYSICAL EXAM
LOOK LIKE THIS ONE?**

- ACCURATE MICRO ADJUSTMENT
- DIRECTION OF STEPPER MOTOR MOVEMENT
- USES SCREEN DISPLAY NO SPECIAL TEST EQUIPMENT
- SCALE A THOUSANTHS OF AN INCH FROM TRACK
- OUTSIDE OF TRACK C INSIDE OF TRACK
- P P F M S B L D G T H A I N U E
- STOP CHECK LOGO SPEEDY NOT NEW
- SCREEN READ OUT OF RADIAL HEAD ALIGNMENT
- CHECKS MECHANICAL STOP POSITION
- CHECKS SPEED & CLAMPING OF DRIVE

Package includes:

- True digital alignment disk with offset tracks
- Quiet Drive stops to reduce need for continued realignment on old style drives.

THE BANNER MACHINE™ for the Commodore 64

Makes signs up to 10" tall by any length.
Borders are variable, up to ¼" wide.
Eight sizes of letters are available from ½" to 6 ½" high.

Proportional spacing, automatic centering, right and left justification.

Standard, emphasized and compressed modes of print.

Save and print banners from disk.
Format banner and review before printing.
Choice of 15 textured backgrounds.

Included FONT DISK 2 optional FONT DISKS

GOTHIC CONDENSED ITALIC 1 THICKER ↓ ↑ BOLD	SANTA FE OPTIMA H SERIF CAMEL CASE	SCOP III GRADED COMPACT
---	---	----------------------------------

Works only with Epson or IBM RS (with Graphics), RA, FA, BA, LG,
German 10, 10A and 15, Commodore MB8, MB1, MB3E,
Benetton, Panasonic P1090, Seikoquo GP100A, Riceman II, Plus, LS,
Hannemann Valley, Sport 80, Okidata 82A, 83A with Chicago, PSA
and XSA, Frontier 8310, C. Husk 8310

THE BANNER MACHINE	\$49.95	Available on DISK only.
FONT DISKS (optional) each	\$39.95	

ditto

COPY DISKS AUTOMATICALLY

\$39.95

- Copies 99% of currently available Commodore 64 disks.
- Supports 1 or 2 1541 drives.
- Easy to use—menu driven.

ORDER TOLL FREE 1-800-MON-SAT

800-762-5645

136-6 Jefferson Davis Hwy., Woodbridge
VA 22191 • Info Call 703-497-6599

In Canada: ASPN Micro
1283 Pharmacy Ave.
Scarborough
Ontario M1P 2T1
(416) 443-0843

MasterCard VISA American Express

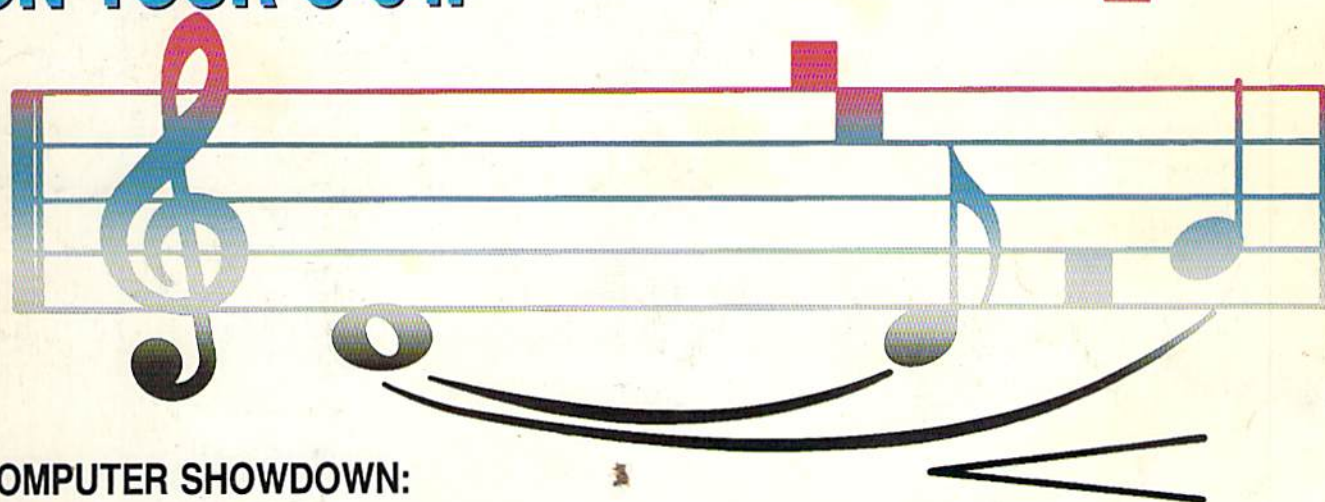
Cardinal Software

**You Could Win
RUN'S
GIVEAWAY
SWEEPSTAKES!**
See Details
Inside

RUN

June 1985 A CWC/I Publication

MAKING MUSIC ON YOUR C-64!



COMPUTER SHOWDOWN:
C-128 Squares Off
Against IIc, PCjr

PLUS:
Super Utilities You
Can't Do Without!

**The Biggest
And Best Basic
For the C-64**





Compiled by LOUIS F. SANDER

**MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.**

Every month, Magic brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). We typically pay \$10 for each trick accepted. Really super ones get \$20–\$50. Send your tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a Trick Writer's Guide. International readers may omit the stamp.

What is so rare as a day in June? A short and powerful utility program, that's what! Well, here are half a dozen, created just for you. (And, of course, another amazing amalgam of astounding alchemical arcana.)

\$1FA Automatic UNNEW—After a Basic program has been killed by a New or a Reset, you can use a machine language Unnew program to resurrect it. The Basic program below creates a most unusual Unnew—one that does its magic without being run. If you have a C-64 or VIC-20, plus a Commodore disk drive, you can use it to put the Unnew program on any disk you choose.

The first time you run the printed program, verify that CS=8620; if it doesn't, you've made a mistake. Once CS=8620, delete lines 1 and 2, then save the result, using some appropriate name. When you run it again, it will put an Unnew program onto your disk. Once you have it there, you can resurrect any program that you have erased with the New command by entering:

LOAD"UNNEW.AUTO",8,1

8 / RUN JUNE 1985

As soon as the load is finished, your lost program will reappear, intact; there's no need to type RUN or SYS.

```
1 FORJ=1TO68:READX:CS=CS+X:NEXT
2 PRINT"CS="CS"(SHOULD BE 8620)":STOP
10 REM AUTOMATIC UNNEW - ERIC HAVER
20 OPEN2,8,2,"UNNEW.AUTO,P,W"
30 PRINT#2,CHR$(128);CHR$(1);
40 READA
50 IFA<>234THEN PRINT#2,CHR$(A);:GOTO40
60 FOR J=1 TO 70:PRINT#2,CHR$(2);:NEXT
70 PRINT#2,CHR$(A);:READ A:IFA>0THEN 70
80 CLOSE 2
91 DATA 160,003,200,177,043,208,251,200
92 DATA 200,152,160,000,145,043,165,044
93 DATA 200,145,043,133,060,160,000,132
94 DATA 059,162,000,200,208,002,230,060
95 DATA 177,059,208,245,232,224,003,208
96 DATA 242,200,208,002,230,060,132,045
97 DATA 164,060,132,046,032,089,166,032
98 DATA 051,165,076,116,164,234,234,234
99 DATA 076,128,001,000
```

Eric Haver
Pittsburgh, PA

\$1FB Basic UNNEW for the C-64—This program creates a single Basic line with an Unnew program embedded in a REM statement. Add the line to any other program, and you can resurrect a mistakenly erased program by entering SYS 2065.

Line 0 must be a REM, one quote, exactly 66 characters of any sort, then a closing quote. It cannot contain extra spaces. If you get an error when running the program, something is wrong with your Data statements. If all is well, the program will list a transfigured line 0, plus the numbers 11–23, with the cursor on the 11. Pressing the return key 13 times will delete all lines but 0.

Save line 0 for future use; you can add it to any program by listing it, loading the other program, putting your cursor on the listed line 0, then pressing the return key. This line can be renumbered, but it must always be the first line in your program.

```
1 REM"66 CHARACTERS - SEE TEXT"
10 FORJ=1TO66:READK:L=L+K:NEXT:RESTORE
11 IFL<>8939THENPRINT"DATA ERROR":STOP
12 FORJ=1TO66:READK:POKE2054+J,K:NEXT
```



```

13 PRINT "{SHFT CLR}{4 CRSR DNs}":FORJ=10TO2
3:PRINTJ:NEXT
14 PRINT "{HOME}";:LIST-1
15 DATA 085,078,078,069,087,050,048,054
16 DATA 053,058,160,003,200,177,043,208
17 DATA 251,200,200,152,172,187,255,145
18 DATA 043,165,044,200,145,043,133,060
19 DATA 172,187,255,132,059,174,187,255
20 DATA 200,208,002,230,060,177,059,208
21 DATA 244,232,224,003,208,242,200,208
22 DATA 002,230,060,132,045,164,060,132
23 DATA 046,096

```

Louis F. Sander
Pittsburgh, PA

\$1FC Emergency UNNEW—Under most conditions, the following C-64 Direct mode line will recover a Basic program so it can be listed on the screen or printer. This will, I hope, give you enough information to enter it again.

POKE 2050,1 : SYS 42291

Do not try to edit a program thus resurrected; doing so can result in an unrecoverable crash. You must use the New command with the resurrected program, then reenter it from scratch. If the program is short enough to list on a single screen, you can list it, use New again, then use your cursor and return keys to reenter each line.

Mike Oehrtman
Stillwater, OK

\$1FD ROMwriter—It's often useful to write the C-64's ROM programs into the underlying RAM, usually by entering something like:

10 FOR J=40960 TO 49151 : POKE J,PEEK(J) : NEXT

This takes over 30 seconds to accomplish, but there's a way to do it in less than a second, using Basic's own mass-move routine, located at 41919. Here's how:

```

10 POKE 95,0 : POKE 96,160
20 POKE 90,0 : POKE 91,192
30 POKE 88,0 : POKE 89,192
40 SYS 41919

```

Line 10 points to the start of the code to be moved, and line 20 points to the byte one location higher than its end. Line 30 points to the byte one location higher than the end of its new position. (In this case, these are 40960, 41952 and 41952, respectively.) The SYS initiates the movement.

The same routine, with different pointers, of course, can be used to move other areas of memory. Because of the techniques used, moves in a downward direction will succeed only if the source and destination areas do not overlap.

James Pellechi
Middle Island, NY

\$1FE C-64 List freezer—The following lines will Poke a machine language routine into empty memory locations at 679-688, then set the vector IQPLOP at 774-775 to point to the start of the routine. Once that has

been done, you can temporarily halt a program listing by pressing the CTRL, Commodore, shift or shift-lock keys. The feature will stay active until you reset your computer.

```

10 FOR J=679 TO 688 : READ K : POKE J,K : NEXT
20 POKE 774,167 : POKE 775,2 : NEW
30 DATA 072,173,141,002,208,251,104,076,026,167

```

If you wish, you can add these lines to the Basic part of the C-64 wedge program. That way, this useful feature will be enabled along with the wedge.

John P. Valengavich
New Britain, CT

\$1FF Compatible color RAM—Different versions of the C-64 behave differently when you Poke characters to the screen, and often you must Poke the color as well as the character. Below is a Basic loader for a machine language subroutine. It clears the screen and instantly fills color RAM with the cursor color. It eliminates all those extra Pokes and makes your program usable on all versions of the C-64.

As an added bonus, it can be used to change the color of all characters without clearing the screen. You can make it a part of your main program or run it separately, then have the main program use it. The loader lines will put the machine language into memory, ready to use until the computer is turned off.

After running the loader lines, SYS 828 will clear the screen and set your color memory to the current cursor color. To change the colors of all characters on the screen without clearing the screen, use SYS 828+5. The commands work either in Direct mode or in a program.

The machine language can be relocated to any place you have 28 bytes of free memory. You need only change the value of AB in line 10 and replace the 828s, mentioned above, with the new value of AB.

```

10 AB=828 : FOR J=AB TO AB+27 : READ K : POKE J,K : NEXT
20 DATA 169,147,032,210,255,173,134,002,041,015,162,000,157,000
30 DATA 216,157,000,217,157,000,218,157,000,219,232,208,241,096

```

C.J. Mohler
Walnut Creek, CA

\$200 Machine language in tape buffer—On the C-64, it's easy to keep any machine language routine in the cassette buffer, even while loading or saving; just type POKE 179,4 before your tape activity. The computer will then use screen memory for its tape activities, leaving your machine language intact in 828-1019. If you don't like the resulting screen disruption, choose another location and Poke it into 178 and 179.

Michael L. Smith
Pacific, MO

\$201 Tricky screen formatting—If you use horizontal lines to divide your screen, this routine will let you print them in most unusual ways. Use GOSUB 1210 to print a line that starts in the center and moves simultaneously toward both ends. Use GOSUB 1220 to

Continued on p. 111.

From p. 10.

print a line from both ends converging toward the center. You can shorten the lines by adding to X in line 1220 or Y in line 1210. Each number added will shorten the line by two spaces.

```
1200 REM**JOSEPH R. CHARNETSKI**
1210 X=19:Y=1:Z=-1:GOTO 1230:REM FROM CENTER
1220 X=1:Y=19:Z=1:REM FROM BOTH ENDS
1230 FOR J=X TO Y STEP Z:PRINT TAB(J){"SHIFT C"};
1240 PRINT TAB(39-J){"SHIFT C"}{"CRSR UP"}
1250 NEXT:PRINT:RETURN
```

Joseph R. Charnetski
Dallas, PA

\$202 PRINT# to the screen—By using variables for device number and secondary address in your Open statement, you can easily send your output to the printer or to the screen. You need only change the values of the variables. Printer device numbers are usually 4 or 5, with various secondary addresses. The screen uses device number 3 and secondary address 1. (The C-64 *User's Guide* mistakenly shows it as device number 0.) Here is an example for the MPS-801 printer in Upper/Lowercase mode:

```
100 INPUT "WANT PRINTED COPY (Y/N)";A$
110 DV=4:SA=7:IF A$="N" THEN DV=3:SA=1
120 OPEN 1,DV,SA
130 PRINT#1,"THIS IS THE OUTPUT"
140 CLOSE 1
```

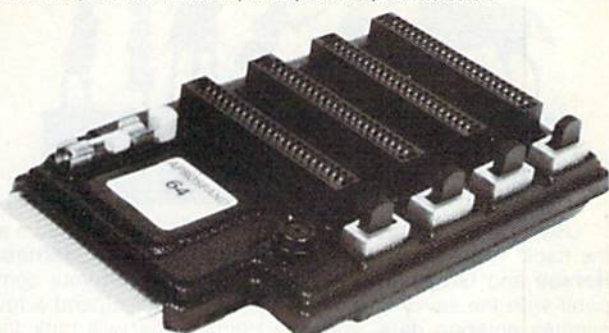
C.G. Sperling
Greenville, SC

\$203 Word trick winner—Here's a different approach to using shifted characters in REM statements. The object is to guess a number between 1 and 10. The answer and some clues are hidden in the REM statements. First, type in the program and save it for future use. Then, to guess a number, remove the quotes from the line having the number you've guessed. When you list the program, you'll see whether you've guessed correctly. If not, you'll get a clue or some moral support.

```
0 LIST 1-
1 REM "H {COMD J}{SPACE}{COMD Q}{SPACE}{SHIFT Q}
  {SPACE} A {SPACE}{SHIFT E} UE {SPACE}{COMD E}
  {SHIFT -} E
2 REM "{COMD L}{SPACE}{SHIFT I}
3 REM "{COMD L}{SPACE}{COMD @} O {SPACE}{SHIFT
  SPACE}
4 REM "WR {SHIFT -} G
5 REM "{COMD L}{SPACE}{COMD @}{SPACE}{COMD U} T
6 REM "{COMD K} TING {SPACE}{SHIFT SPACE}
7 REM "{COMD D}{COMD D} $ {SHIFT I}{COMD D}{COMD D}
8 REM "H {COMD J}{SPACE}{COMD Q}{SPACE}{SHIFT B}
  {SPACE}{COMD S}
9 REM "DO {SPACE}{COMD L}{SPACE}{COMD -}{SPACE}
  {COMD Q}{SPACE}{SHIFT K}{SPACE}{SHIFT M}{SPACE} IT
10 REM "H {COMD J}{SPACE}{COMD Q}{SPACE}{SHIFT Q}
  {SPACE} A {SPACE}{SHIFT E} UE {SPACE}{COMD W}
  {SHIFT R} E
```

Randy Thompson
Eugene, OR

APROSPAND-64™ Gives your Commodore 64 full expandability! This superbly designed expansion module plugs into the 64 & gives you 4 switchable (single or in any combination) expansion connectors - plus fuse protection - plus a reset button!



ONLY \$39.95

Commodore Interfaces and Accessories

ParallAX-CD Parallel Printer Interface for use with all Commodore (except PET).....	\$57.95
Cardprint +G Parallel Printer Interface.....	\$59.95
Cardprint B (without graphics).....	\$37.95
AP-Switch -3P 3 to 1 Centronics Parallel Peripheral Switch. Switches active pins 1-18 and 31-36. Connects your computer to up to 3 parallel printers or up to 3 computers to one printer.....	\$97.95

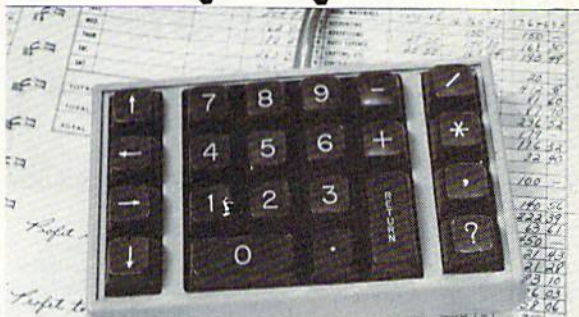
APROPOS TECHNOLOGY

1071-A Avenida Acaso, Camarillo, CA 93010
CALL OUR TOLL FREE ORDER LINES TODAY:
1-(800) 962-5800 USA or 1-(800) 962-3800 CALIFORNIA
TECHNICAL INFORMATION: 1-(805) 987-2454
Add Shipping Per Item: \$3.00 Cont. U.S. \$6.00 CAN, Mexico, HI, AK, UPS Blue

CA Res. Add 6% Tax
Listed are cash prices.
Visa or MC add 3%

Circle 100 on Reader Service card.

Your 1,2,3 choice



CP Numeric Keypad for Commodore 64 and VIC-20, Model: NKP Deluxe

Yes, you have the choice. Different jobs require different tools. That's why we provide you with three models of Numeric Keypads for your Commodore 64. These Numeric Keypads are designed with top quality, low profile key switches for smooth, reliable and low-cost data entry. They easily connect in parallel with the computer keyboard. No software is required. They are 100% compatible with all the programs. The setup is simple, the usage is comfortable, and the price is very affordable.



NKP \$59.95



NKP Plus \$69.95



NKP Deluxe \$79.95



Computer Place

(213) 325-4754

23914 Crenshaw Blvd. Torrance, CA 90505

VISA, MC and AE cards accepted. No C.O.D.
Add \$3.00 shipping. Ca. residents add 6.5% sales tax.

Dealer Inquiries Welcome

Commodore 64 and VIC-20 are trademarks of Commodore Business Machines, Inc.



The Handicapper

Use your **Commodore 64** to improve your performance at the track! These fine programs for **Thoroughbreds, Harness Horses** and **Greyhounds** combine the power of your computer with the savvy of a veteran handicapper. Spend a few minutes entering data, and The Handicapper will rank the horses or dogs in each race. All the information you need is readily available from the Thoroughbred Racing Form, harness or greyhound track program. We even provide a diagram that shows you where to find it!

Horse racing factors include speed, class, past performance, post position, stretch gain, beaten favorite, jockey or driver's record, weight (for thoroughbreds) and parked-out signs (for trotters). **Greyhound factors** include speed, past performance, class, favorite box, kennel record, breaking tendencies, beaten favorite.

Complete instructions and wagering guide included. **Thoroughbred, Harness or Greyhound Handicapper**, only \$34.95 each on tape or disk. Any two, just \$49.95. All three only \$64.95. Checks, Money Orders or VISA/MC welcomed.

Federal Hill Software
825 William Street
Baltimore, Md. 21230

Toll Free (Orders Only) 800-245-6228
For Information Call 301-547-1447

Circle 199 on Reader Service card.



PERSONAL PERIPHERAL PRODUCTS presents our LOWEST PRICES EVER SPEAKEASY CARTRIDGE & SMOOTHALKERTM SOFTWARE

EASY TO USE • HIGH QUALITY HUMAN SPEECH • VIC-20 & COM 64
USED TOGETHER YOU HAVE:

- Unlimited vocabulary
- Exclusive exception dictionary allows you to customize words
- 4 levels of inflection allows you to have multi-voice conversations
- SAY command works just like a PRINT STATEMENT but it also TALKS
- Works with Speakeasy to give you crisp, clear, easy to use speech.

SPEAKEASY CARTRIDGE (C-64 requires adaptor below) \$29.95

SMOOTHALKER SOFTWARE (spec. Vic or 64;
Vic needs 8K in block 5) 19.95

TALKING PRINT (automatically talks existing print statements) 19.95

C-64 ADAPTER 12.95

VIC-20 RAM CLOSEOUTS

	Kit	Assembled
8K	\$14.95	\$19.95
16K	24.95	29.95
3 SLOT (switched & fused)	19.95	24.95

10% OFF ON ALL ORDERS OVER \$150⁰⁰

Add \$2.00 Shipping/Handling

PERSONAL PERIPHERAL PRODUCTS

OS200 Winfield Rd.
Winfield, IL 60190 (312) 961-2347

COM-64 & VIC-20 IS A TRADEMARK OF COMMODORE

R Magic

\$204 Plus/4 and C-16 graphics—These machines have some wonderful graphics modes that have to be used to be believed. A minor inconvenience is that sometimes you get hung up in a non-text mode, with no obvious way out. I avoid the problem by using another wonderful Basic 3.5 feature—the easily programmable function keys. When I start to program with graphics, I just type KEY1, "GRAPHIC 0" + CHR\$(13) {return}. From then on, pressing the f1 key returns me to full Text mode.

Scott Burg
Phoenix, AZ

\$205 C-16 and Plus/4 screen titles—With this trick, you can print your program title at the top of the screen and forget about it. It will stay there until you remove it with a SYS 55432 or by pressing the ESC key followed by the N key.

10 SYS 55432 : REM CLEAR SCREEN & SET NORMAL WINDOW

20 PRINT "Your title goes here"

30 SYS 56926 : REM SET SCREEN WINDOW BELOW TITLE

Jerry W. Jarvis
Spokane, WA

\$206 SX-64 disk tip—Since a shifted run/stop on the SX-64 loads the first program on disk, I start each disk with the Menu program from Commodore's Disk Bonus Pack. That way, a single keypress gives me a complete list of programs on the disk.

Tony Grice
Queensland, Australia

\$207 1520 plotter supplies—Commodore's 1520 plotter has the same mechanism as Radio Shack's CGP-115 and uses the same supplies, which are available at any Radio Shack store. The paper is #26-1428. Black pens are #26-1480, and colored ones are #26-1481. As always, the price is right, and if your store doesn't stock these items, the manager can order them for you.

Richard Fader
Fort Lee, NJ

\$208 Disk error light—If your 1541's red light starts blinking, some sort of disk error has occurred. If you have the wedge in memory, type @ {return} to find out what type of error occurred. Otherwise, enter and run the following line.

10 OPEN 15,8,15 : INPUT#15,A\$,B\$,C\$,D\$: PRINT A\$,B\$,C\$,D\$:
CLOSE 15 : END

You cannot enter this in Direct mode, because the Input# statement is only valid in a program. You can use any line number you want, and there's no reason to destroy any program you already have in memory. Merely enter the line with an unused number XXX, then type RUN XXX {return}. Delete XXX after it's done its work.

The message you get will consist of an error code, error

name and the track and sector on which the error occurred. Often the error name is enough to tell what happened, but the error code can be helpful, too. Your 1541 operator's manual includes a most informative listing of error codes.

Mark Blayney
Darwin, Northwest Territory
Australia

\$209 Koala Pad buttons—By Peeking memory location 197, you can tell if the Koala Pad's buttons have been pressed. The result will be 59 when the right button is down and 50 when the left button is down. Other numbers mean no Koala button is down.

Randy Batt
Haysville, KS

\$20A Okimate programs—If you use your Okimate 10 to print pictures made with the popular Doodle! program, the manual says you need a Learn To Print disk plus your Doodle! file. Since Learn To Print has only 21 blocks free, the Doodle! file has to be on a separate disk, and you waste a lot of time in swapping disks.

I've learned that you don't need all the Learn To Print files. The ones you need leave over 500 blocks free on the disk, and you can use those blocks to store picture data and printer routines. These are the files you need: COLOR, N, W, S, U, V, T and AA. Use a file copy program to put them onto a disk, then fill the remaining space with your artwork.

Colin Crawford
Grafton, OH

\$20B Paper for the Okimate 10—This little printer will do wonderful black-on-white printing without a ribbon, if you use the right kind of thermal paper. The thermal paper for the IBM PC Junior is widely available and comes in rolls, fanfold and single sheets. It gives better print quality than you can get with a ribbon or with Okidata's special smooth paper.

William R. Alsing
St. Louis, MO

\$20C Left-handed joysticks—The standard Atari joystick has its fire-button on the left side, making it inconvenient for left-handers to reach. By making some easy wiring changes, you can make the joystick suitable for lefties.

Remove the screws from the bottom of your joystick and observe the six wires attached to the unit by removable connectors. The original wiring follows the order: brown, white, black, blue, green, orange. To get the "lefty" modification, rearrange the order as follows: blue, brown,

black, green, white, orange. Notice that the connectors are very easy to change and that you have to move only four wires.

When you've made the changes and screwed the joystick shut, just turn the lefty joystick so the fire-button is on the right side.

Al Degutis
Chicago, IL

\$20D Call waiting—If you have the call-waiting feature on your telephone, incoming calls can disrupt communications over your modem. Here's a simple way to disable this feature while you're computing. Prior to going on-line, just dial a 9 on your telephone, push the tone button once, as you would if answering a call-waiting signal, then dial the number for your computer call. Anyone trying to call you will simply get a busy signal until you complete your computing session, and the phone will resume its normal status when you log off your system.

W.L. Cochran
Green Cove Springs, FL

\$20E Flip files—If you keep your reference data on 3x5 cards, try keeping your cards in a replacement leaf—the kind used in flip-type picture albums. These pages cost about \$1.50 and can hold 20 cards. The cards fit into transparent sleeves that are staggered from top to bottom. This arrangement allows you to label the bottom of each card for easy reference.

Doug Curtis
Waukesha, WI

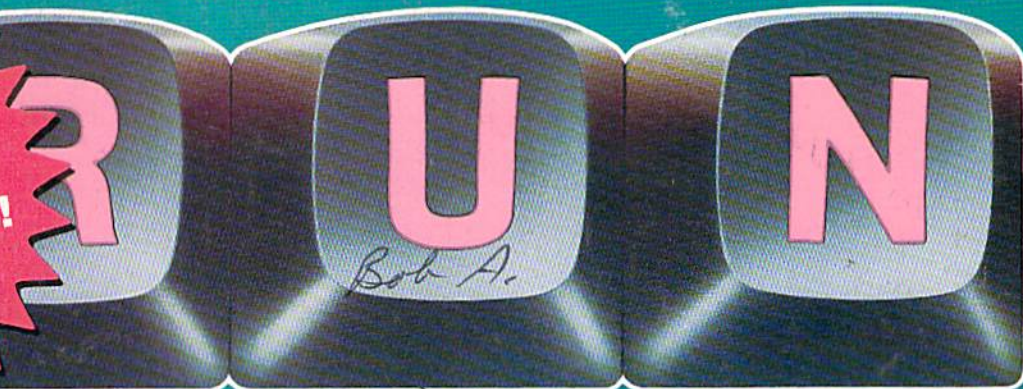
\$20F Loading from tape—When your tape pauses after the Found message, you can end the pause by pressing the CTRL, Commodore or space keys. If you have a joystick plugged into port 1, you can do the same thing by pressing the fire-button.

Luis Daniel Martinez Calcano
Caracas, Venezuela

\$210 Easy RUN—When typing RUN to start a program, you need not move your cursor to a blank line, and you need not clear your screen. Just type a colon after the RUN, then press the return key.

Robert Train
Patchogue, NY
RUN JUNE 1985 / 113

You Could Win
RUN'S
GIVEAWAY
SWEEPSTAKES!
See Details
Inside



July 1985 A CWC/I Publication

**ADD DAZZLING GRAPHICS
TO YOUR C-64!**

**Tips to Keep Your
Disk Drive
Running Smoothly**

**Speed Up Your
Database Printouts**

**Can You Survive
CHOPPER RUN?**



Plus: Turtle Graphics

C-64 Database Roundup



Compiled by LOUIS F. SANDER

**MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.**

In addition to two dynamite screen programs, this month's assortment emphasizes disk drives and hints for using commercial software. Next month—printers and programming tips.

\$211 Plus/4 and C-16 Super Palette—

This program elegantly displays all the Basic 3.5 colors, at all luminance levels. Instructions appear in lines 3 and 4. When entering C\$ in line 100, hold down the control, or CTRL, key, then press each number key from 1-8. Release the control key and hold down the Commodore key, then press 1-8 again. You should end up with 16 reverse-field characters between the quotes.

```
1 REM SUPER PALETTE-LOUIS F. SANDER
2 REM
3 REM COLOR KEYS CHANGE BKGD COLOR
4 REM NUMBERS 0-7 CHANGE BKGD LUM
5 :
100 C$=" " - SEE TEXT - ":N$="01234567"
110 C=2:GRAPHICS1:TRAP250
120 COLOR0,C:COLOR2,1:COLOR3,C:COLOR4,C
130 BOX3,0,0,10,23,0,1
140 CIRCLE2,4,10,3,8:PAINT2,+0,+1
150 SSHAPEA$,0,0,10,23
160 FORX=0TO15:FORY=0TO7:COLOR2,X+1,7-Y
170 GSHAPEA$(X*10),(Y*24),0
180 NEXT:NEXT:PAINT3,159,199
190 GETKEYA$
200 FORJ=1TO16
210 IFASC(A$)=ASC(MID$(C$,J))THENC=J
220 NEXT:FORJ=1TO8
230 IFAS=MID$(N$,J,1)THENL=VAL(A$)
240 NEXT:COLOR3,C,L:COLOR4,C,L:GOTO190
250 COLOR0,2:COLOR1,1:GRAPHIC0
```

Louis F. Sander
Pittsburgh, PA

C-64 screen into two different-colored sections. Lines 1-3 will detect typing errors in your Data statements; you should delete them when the program asks you to, then save the remaining lines as your master routine. It will be compatible with most Basic programs, especially the ones not involving machine language.

Delete lines 1-3 and run your program. Anytime after doing this, you can split the screen by executing SYS 40800. The split will remain until stop/restore cancels it; it can be recalled by repeating the SYS 40800.

You can change the top color by changing the sixth item (002) in line 21, or, after running the program, by entering POKE 40877,c (where c is the number for the color you want). You can change the bottom color by changing the eighth item (007) in line 18 or by POKE 40855,c. The screen split can be after any line, and its location is controlled by the fifth item in line 13 (010=split occurs after tenth line). To change the split location on an already-split screen, enter POKE 40812,n:SYS40800 (where n is the number of lines to appear above the split).

```
0 REM SPLIT SCREEN - RICHARD RAPPACH
1 FORJ=1TO89:READA:B=B+A:NEXT
2 IFB<>9955THENPRINT"DATA ERROR":STOP
3 PRINT"DATA OK. DELETE LINES 1-3.":END
10 POKE56,159:POKE52,159
11 FORJ=40800TO40888:READA:POKEJ,A:NEXT
12 DATA 120,169,127,141,013,220,169,001
13 DATA 141,026,208,169,010,042,042,042
14 DATA 105,050,141,095,159,141,018,208
15 DATA 169,027,141,017,208,169,137,141
16 DATA 020,003,169,159,141,021,003,088
17 DATA 096,173,018,208,205,095,159,208
18 DATA 021,169,000,141,018,208,169,007
19 DATA 141,033,208,169,001,141,025,208
20 DATA 104,168,104,170,104,064,173,095
21 DATA 159,141,018,208,169,002,141,033
22 DATA 208,169,001,141,025,208,076,049
23 DATA 234
```

Richard Rappach
Youngstown, OH

\$212 Split screen—The following short routine, using what's called a raster interrupt, splits the

\$213 ESP program—This little program gives the impression that your computer has ESP, or extrasen-

sory perception. You tell your friends that your computer "knows" you and will not cooperate with anyone else. Then you load ESP, type RUN and press the return key. The program runs fine. (It also disables List, to protect our little joke.)

The fun starts when you ask someone to run the program. Your friend types RUN and presses the return key, but the computer refuses to obey and instead disables the keyboard! You miraculously enable it again and run the program effortlessly; anyone else who tries it will fail. The computer appears to respond only to your mystical presence.

Here's how it works. After typing RUN, you hold your finger on the return key a little longer than normal (line 30 checks for this). When your friends fail to do this, lines 80-110 cause an apparent crash. To enable the keyboard, you discreetly press the back-arrow key, which gets you out of the loop.

If your friends suspect your slow action with the return key, mislead them by pressing it normally and immediately holding down the N key. This is easy, because you just had your finger on it from typing the word RUN. When they have been mystified long enough, you press the back-arrow key while the program is running, and List is re-enabled.

This ESP trick is easy to perform, and, with a little practice and showmanship, you can baffle even the most knowledgeable computerists.

```
10 REM ESP - DON THORPE
20 POKE808,234:FORJ=1TO250:NEXT
30 IFPEEK(197)<>1ANDPEEK(197)<>39THEN80
40 POKE808,237:POKE775,200
50 PRINT"HELLO, FRIEND.{2 SPACES}SEE ME RUN
  !"
60 IFPEEK(197)=57THENPOKE775,167
70 GOTO50
80 PRINT:PRINT
90 PRINT"BEGONE! I DO NOT KNOW YOU."
100 PRINT:PRINT"READY.":POKE204,0
110 IFPEEK(197)<>57THEN110
120 WAIT207,1,1:PRINT"{3 CRSR UPS}"
130 POKE808,237:POKE198,0
```

Don Thorpe
Glenunga, South Australia

\$214 Ghostfreezers—In Activision's Ghostbusters game, one screen requires you to maneuver a ghost into a trap using laser beams. A simpler way is to align your men so they totally overlap one another, appearing to be only one man. When the ghost flies over you, press the fire-button, and the ghost will stop. Press it again and he's history.

Maurice Arkinstall
Houston, British Columbia

\$215 Doodle and Print Shop combined—

If you own these excellent programs, you might like to put some Print Shop lettering on the screen, then decorate the display with Doodle's superior drawing options. If you have a machine language monitor, you can do it with

ease. Let's say you wrote something with Print Shop and saved it as TEXT. Just enter your monitor and do this:

```
.L "TEXT",08 (load from monitor)
.T 4000 5F3F 6000 (transfer Print Shop screen to Doodle area)
.F 5C00 5FE7 01 (add color: black)
.S "DDTEXT",08,5C00,7F3F (save, adding "DD")
```

Then, from Doodle, load TEXT and doodle to your heart's content. Of course, you can substitute any name for TEXT, as long as you add the DD when saving it as a Doodle file.

Erik Francois
Vienne, France

\$216 Wolfenzauberei—When your Beyond Castle Wolfenstein man is killed, the computer asks you to press the space bar to restart the game. If you remove the disk before pressing the space bar, what follows is sheer magic (in German, *Zauber*); the game will restart in the position right before you died or got caught. After restarting, reinsert the disk and resume where you left off.

Darius Hatami
Mystic Islands, NJ

\$217 Star Wars trickery—If you own Star Wars the Arcade Game for the C-64, and would like a fast way to the death star, try this: Start the game and press the restore key and the space bar simultaneously. This should stop most of the fighters in their tracks and cause the rest to move in a straight line. Repeat the procedure, and all fighters should stop. Now, with the enemy disabled, kill his forces off and you should appear at the trench.

Jared Groth
Detroit, MI

\$218 Datassette audio—If your video monitor has sound capability, you can use it to listen to your Datassette tapes. Such listening is most informative and often helps diagnose difficulties with the tape system. To do the magic, enter POKE 54296,15 then turn your volume up to max. When you load, save or verify, you should hear the tape loud and clear.

Dan Kennedy
Gearhart, OR

\$219 Dead Datassette—If your Datassette suddenly stops operating, but everything else works fine, the chances are good that part of your power supply has blown. The power supply provides both 5 volts dc and 9 volts ac, with the latter used for the tape deck. You can use a Radio Shack #273-1515 transformer, 18 volts center-tapped, to bypass a defective 9-volt supply. Unless you're qualified in electronics, you should get a knowledgeable friend to help you.

Strip the round power supply cord and identify the red and blue wires, plus two black ones. Cut the black wires and connect them to the 9-volt ac from your new transformer, and you should be back in business. If you

Continued on p. 100.

From p. 10.

want, you can attach the new transformer to the top of the old power supply; it's not too fancy, but it's definitely functional.

John Long
Clarkston, GA

Eddie Lyons
Bronxville, NY

\$21A Disk archives—A compulsory part of anyone's disk library is the file of backup disks. For my own backup file, I used brand-new disks, appropriately named and write-protected and sealed in zip-lock sandwich bags to guard against dust and moisture. These are then put in a plastic disk box and stored in a linen cupboard, far away from magnetic fields of any sort.

Jim Lynch
Antigua, West Indies

\$21B Disk hang-up fix—Sometimes disk drives, especially the older ones, seem to disregard your commands from the keyboard. When this happens, try simultaneously pressing the stop and restore keys. Chances are, the hang-up will end immediately.

Eric Haver
Pittsburgh, PA

\$21C 2040/4040 disk drives—If you use one of these units, you may have trouble loading software written for the 1541, even though the disk formats are compatible. It sometimes helps if you put the 1541 disk in drive 0 and put another formatted disk in drive 1. If the program still doesn't load, it's because the manufacturer used a protection scheme that depends on the frailties of the 1541 drive.

Bruce Jaeger
St. Paul, MN

\$21D Disk-save command quirks—If you type

SAVE"PROGRAM",8

you will get "PROGRAM" PRG in the disk directory. If you type

SAVE"PROGRAM,S",8

the directory will show "PROGRAM" SEQ, and the program won't load unless you enter LOAD"PROGRAM,S". If you save it as "PROGRAM,U", it will similarly show up as "PROGRAM" USR in the directory, and must be loaded as "PROGRAM,U".

You can use these quirks in several ways. If, for instance, you save a program whose name ends in ".S", you give it a modest amount of security from being loaded by others. Only those in the know would think of trying to load what appears to be a SEQ file. Or, if you make it a habit to end machine language program names with ".U", the USR in the directory will be your clue that they must

be loaded with ,8,1. The clue is a good one, since Radio Shack and some other computers reserve the USR designation for machine language files.

\$21E GET# improved—Here's an incredible C-64 trick that works the same as the GET# statement, but is about five times faster. The editors tried it on a directory-reading program that contained a lot of GET# statements, and execution time was cut in half.

There's a routine in the operating system that works like CMD, but in the opposite direction—it defines a certain file as the input channel, rather than the output channel. To call the routine from Basic, Poke the file-number into location 781, then execute a SYS 65478. Once that's done, you can use the normal GET statement to read a character from the file. When you're through reading from the file, you must clear the input channel with SYS 65484.

The trick speeds things up because Basic is relieved from constantly switching its input channel between the keyboard and the file. Although we've only tested it on disk, it should work with cassette files, too.

Tim Gerchmez
Bellevue, WA

\$21F Closing files—The well-known SYS65511, often said to close all files, really doesn't do that. It causes the computer to forget its opened files, but does *not* signal the peripherals to close them. While some may call this a minor difference in semantics, it can be disastrous when disk files are involved. The following one-liner is the easiest and most effective way I've found to close all open files at once, regardless of what files they are or of when and where they were opened.

X=PEEK(152):FOR J=1 TO X:CLOSE PEEK(601):NEXT

Location 152 contains the number of currently open files. The ten-byte queue starting at 601 contains their file numbers and works similarly to the keyboard buffer. As each file is closed, its entry is removed, and the rest are moved down one byte. If you enter the one-liner exactly as shown, you'll successfully close all files.

By the way, POKE 152,0 yields the same results as SYS65511. In fact, that is exactly what SYS65511 does.

Charles Lavin
Coral Gables, FL

\$220 Disk ID changers—A disk's two-character ID is recorded once in the directory and once on each disk sector. If you have inadvertently given two disks the same ID, you can use the following routine to change the directory, which will avoid most of the problems of duplicate IDs. Use spaces where they are shown in the

Print# statements, and don't forget the semicolon at the end of line 50.

```
10 OPEN 15,8,15,"I0" : OPEN 2,8,2,"#"
20 INPUT "NEW ID":ID$
30 PRINT#15,"U1:2 0 18 0"
40 PRINT#15,"B-P:2 162"
50 PRINT#2,ID$:
60 PRINT#15,"B-P:2 0"
70 PRINT#15,"U2:2 0 18 0"
80 PRINT#15,"I0"
90 CLOSE 2 : CLOSE 15
```

By adding these lines, the program can be changed to restore the disk's original ID. Note the new line 20.

```
20 PRINT#15,"M-R"CHR$(18)CHR$(0)CHR$(2)
25 GET#15,A$,B$: ID$ = A$ + B$
```

Mark Niggemann
Ames, IA

\$221 Write-protect detector—This routine detects if your disk has its write-protect notch covered. It reads bit 4 of a port at \$1C00 on the disk controller; if the bit is set, the write-protect notch is open.

```
10 OPEN 15,8,15
20 PRINT#15, "M-R"CHR$(0)CHR$(28)
30 GET#15,A$: A = ASC(A$ + CHR$(0)) AND 16
40 IF A = 0 THEN PRINT "WRITE PROTECTED"
50 CLOSE 15
```

Mark Niggemann
Ames, IA

\$222 Outside reading—*IEEE Spectrum*, the monthly publication of the Institute of Electrical and Electronics Engineers, is a semi-technical journal of interest to all sorts of electrical engineers. Its March 1985 issue contained a superb ten-page article on the design history of the Commodore 64. It includes, among other things, the real explanation of "sparkle" on the early 64s and tells why the 1541 disk drive is so slow. If you know an IEEE member, ask to see that copy.

L.F.S.

\$223 Wavy video—If your power supply is physically close to your monitor, it can cause a slow, side-to-side waving in the video display.

Sechzig Hertz
Störung, Germany

\$224 Hex conversion aid—Radio Shack's #65-990 Programmer's Hexadecimal Calculator has been a wonderful addition to my computer room. It converts hex to decimal and vice versa, more smoothly and with less effort than any unit I've seen. It includes a clock and calendar, so it's useful even when sitting on the desk. At \$24.95, it's a worthwhile tool for any programmer.

Oberon King
Staten Island, NY

Circle 208 on Reader Service card.

SUPER FORTH 64* +

TOTAL CONTROL OVER YOUR COMMODORE-64*
USING ONLY WORDS

MAKING PROGRAMMING FAST, FUN AND EASY!

MORE THAN JUST A LANGUAGE...

A complete, fully-integrated program development system.

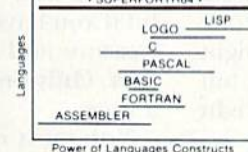
Home Use, Fast Games, Graphics, Data Acquisition, Business, Music
Real Time Process Control, Communications, Robotics, Scientific, Artificial Intelligence

A Powerful Superset of MVFORTH/FORTH 79 + Ext. for the beginner or professional

- 20 to 600 x faster than Basic
- 1/4 x the programming time
- Easy full control of all sound, hi res. graphics, color, sprite, plotting line & circle
- Controllable SPLIT-SCREEN Display
- Includes interactive interpreter & compiler
- FORTH virtual memory
- Full cursor Screen Editor
- Provision for application program distribution without licensing
- FORTH equivalent Kernel Routines
- Conditional Macro Assembler
- Meets all FORTH 79 standards*
- Source screens provided
- Compatible with the book "Starting FORTH" by Lea Brodie
- Access to all I/O ports RS232, IEEE, including memory & interrupts
- ROMABLE code generator
- MUSIC EDITOR
- TURTLE GRAPHICS
- SPRITE EDITOR
- Access all C-64 peripherals including 4040 drive and EPROM Programmer
- Single disk drive backup utility
- Disk & Cassette based. Disk included
- Full disk usage—680 Sectors
- Supports all Commodore file types and FORTH Virtual disk
- Access to 20K RAM underneath ROM areas
- Vectored kernel words
- TRACE facility
- DECOMPILER facility
- Full String Handling
- ASCII error messages
- FLOATING POINT MATH SIN/COS & SQRT
- Conversational user defined Commands
- Tutorial examples provided, in extensive 261 page cross referenced manual
- INTERRUPT routines provide easy control of hardware timers, alarms and devices
- USER Support

SUPER FORTH 64* is more powerful than most other computer languages!

* SUPERFORTH64 *



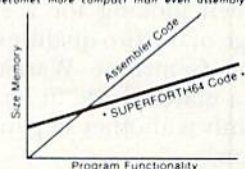
A SUPERIOR PRODUCT
in every way! At a low
price of only

\$59

PARSEC RESEARCH
Drawer 1776, Fremont, CA 94538

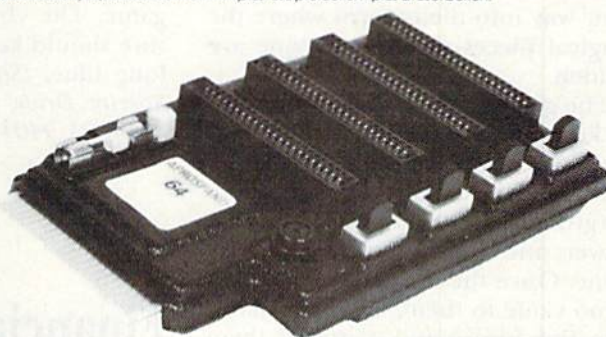
Call:
(415) 651-3160

SUPER FORTH 64* compiled code becomes more compact than even assembly code!



for orders outside of California
(800) 633-6335
or See Your Local
Computer Store

APROSPAND-64™ Gives your Commodore 64 full expandability! This superbly designed expansion module plugs into the 64 & gives you 4 switchable (single or in any combination) expansion connectors - plus fuse protection - plus a reset button!



ONLY \$39.95

Commodore Interfaces and Accessories

- ParallAX-CD Parallel Printer Interface for use with all Commodore (except PET).....\$57.95
- Cardprint +G Parallel Printer Interface.....\$59.95
- Cardprint B (without graphics).....\$37.95
- AP-Switch -3P 3 to 1 Centronics Parallel Peripheral Switch. Switches active pins 1-18 and 31-36. Connects your computer to up to 3 parallel printers or up to 3 computers to one printer.....\$97.95

APROPOS TECHNOLOGY

1071-A Avenida Acaso, Camarillo, CA 93010

CALL OUR TOLL FREE ORDER LINES TODAY:

1-(800) 962-5800 USA or 1-(800) 962-3800 CALIFORNIA

TECHNICAL INFORMATION: 1-(805) 987-2454

Add Shipping Per Item: \$3.00 Cont. U.S. \$6.00 CAN, Mexico, HI, AK, UPS Blue

CA Res. Add 6% Tax
Listed are cash prices.
Visa or MC add 3%

You Could Win
**RUN'S
GIVEAWAY
SWEEPSTAKES!**
See Details
Inside

RUN

August 1985 A CWC/I Publication

DISK DRIVE INVASION

1541 Alternatives Sighted!
Choices Confront C-128 Owners

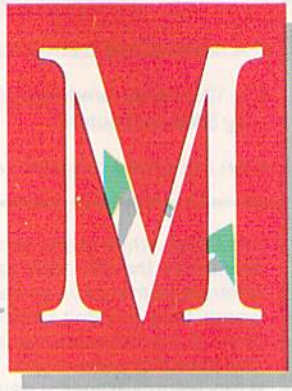
LIFE IN THE FAST LANE

Speedy Solutions to
Commodore's Drive Problem

GAMES PEOPLE PLAY... via Modem

Test Your Aim with
TRAP SHOOT





Compiled by LOUIS F. SANDER

**MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.**

Every month, Magic brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). We typically pay \$10 for each trick accepted. Really super ones get \$20–\$50. Send your tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a Trick Writer's Guide. International readers may omit the stamp.

Printers, programs, pointers, precepts. Prestidigitation? Precisely. Prodigious? Possibly. Partake!

\$225 COL to the colors—The following program makes it easy to set your C-64's border, screen and cursor colors. You can always set them by Poking locations 53280, 53281 and 646, but, when you hit the run/stop along with the restore key, your hues become blues, and you have to Poke again.

As printed, the program includes a checksum routine to verify the correctness of your Data statements. Run it, and if you get a Data Error message, check your typing. When your Data statements are correct, you'll be asked to delete lines 2–4. Do that, then save the resulting program.

When you run the data-verified program, it will ask for the colors you prefer; unless you like the defaults I've provided, you should respond with the Poke values of your favorite colors (see Appendix G of the user's guide). After that, any time you wish to set the colors, simply type COL and press the return key. The run/stop and restore keys will still give you the blues, but a COL will brighten your screen and your day. Unfortunately, COL doesn't work from inside a program. You can insert your

own default values by plugging them into the initial statements of lines 50–70.

```
1 REM COL TO THE COLORS - ERIC BREault
2 FORJ=1TO92:READK:CS=CS+K:NEXT
3 IFCS<>10512THENPRINT"DATA ERROR":END
4 PRINT"DELETE LINES 2-4":END
10 FORJ=49152TO49230:READK:POKEJ,K:NEXT
20 FORJ=828TO840:READK:POKEJ,K:NEXT
30 PRINT"COLOR POKES FOR COL COMMAND:{CRSR
DN}"
40 PRINT"(RETURN GIVES GREY/BLU/GRN){CRSR D
N}"
50 B=12:INPUT"BORDER";B:POKE49174,B
60 S= 6:INPUT"SCREEN";S:POKE49179,S
70 C=13:INPUT"CURSOR";C:POKE49184,C
80 SYS828:PRINT"NOW TYPE COL <RETURN>"
81 DATA 173,000,002,201,067,208,030,173
82 DATA 001,002,201,079,208,023,173,002
83 DATA 002,201,076,208,016,169,012,141
84 DATA 032,208,169,006,141,033,208,169
85 DATA 013,076,048,192,234,230,122,208
86 DATA 003,076,119,000,076,121,000,096
87 DATA 141,134,002,169,000,162,007,157
88 DATA 255,001,202,240,004,076,055,192
89 DATA 234,096,234,234,096,000,251,000
90 DATA 251,000,251,000,251,000,251,169
91 DATA 076,133,115,169,000,133,116,169
92 DATA 192,133,117,096
```

Eric Breault
Pawtucket, RI

\$226 Multi-selective directory—It's well-known that you can load a selective directory by using something like \$0:AB*, which will load a directory of all disk files whose names begin with AB. It's less well-known that you can use \$0:AB*,CD* to get all those files whose names start with AB or CD.

You can make up to five selections at one time, and the trick works with or without the wedge. The entries for the different selections are not separated on your screen, but appear intermingled in the order in which they appear on the directory as a whole.

Lowell K. Unger
Wynyard, Saskatchewan
Canada

\$227 Disabling Epyx Fast Load—This popular cartridge sometimes interferes with the loading or running of other programs. You can disable it by entering:

POKE 770,131 : POKE 771,164

This will re-enable it:

POKE 770,106 : POKE 771,223

Greg B. LaPorte
Blacksburg, VA

\$228 Plus/4 and C-16 easy saves—Make your first program line

1 REM {SPACE} programname

Then you can save it by listing that line, putting the cursor on the 1 and pressing the f5 key. DSAVE" will overwrite the 1 REM {SPACE} and pressing the return key will save the program.

G. Bradford Tiffany
Needham, MA

\$229 Summertime sounds—This will produce the sound of rolling waves on your C-64.

```
10 REM WAVES - DANIEL WOODIE
20 V = 54272:POKEV + 6,240:POKEV + 4,129:POKEV + 1,34:POKEV,75
30 FORA = 1TO15:POKEV + 24,A:FORD = 1TO50:NEXTD:NEXTA
40 FORB = 15TO1STEP - 1:POKEV + 24,B:FORD = 1TO200:
  NEXTD:NEXTB
50 FORD = 1TO600 + 1200*RND(0):NEXTD:GOTO20
```

Daniel Woodie
Annapolis, MD

Here is a version for the newer machines.

```
10 REM PLUS/4 & C-16 WAVES - LOUIS F. SANDER
20 S = 720 + 20*RND(1):FORV = 1TO8:VOLV:SOUND3,S,V + 2:
  NEXTV
30 FORV = 8TO1STEP - 1:VOLV:SOUND3,S,7*(8 - V):NEXTV
40 SOUND3,S,250:FORD = 1TO1500*RND(1):NEXTD:SOUND3,S,0:
  GOTO20
```

L.F.S.

\$22A Redimensioning arrays—Here's a technique you can use to free up memory space and redimension arrays without getting a fatal Redim'd Array error. It resets the array pointer, clearing the array space without clearing other variables. To use it, simply insert the following line before the computer encounters another DIM statement.

POKE 49,PEEK(47) : POKE 50,PEEK(48)

Jim Knarr
N. Manchester, IN

\$22B Selective load and run on tape—To use the shifted run/stop key on a named program, type four spaces, then your program name in quotes. Move your cursor back to the start of the line, using cursor-lefts or a shifted return plus a cursor-up. When you press

the shifted run/stop key, the selected program will automatically load and run.

Steve Hedemann
Richfield, MN

\$22C Single-sheet printing tips—Many printers have a paper alarm that discontinues printing when the paper runs out or breaks. The details of these alarm systems vary, but they work on the same general principles. On Commodore's 1526, for example, normal-feeding paper closes a microswitch placed inconspicuously in its path. When a paper outage opens the switch, the printer stops and the paper-advance button flashes as a warning.

The paper-alarm feature can be a nuisance when printing single sheets, especially when it activates partway down your printed page. Here are some ways to avoid this inconvenience.

- If tape is too much trouble, wait until printing stops, then feed another sheet behind the first one. Just push it in until the printer mechanism stops it, and there's a good chance it will clear the alarm. Sometimes you must also press a switch to resume printing. On the 1526, you press the flashing paper-advance button.

- Tape a second sheet to the bottom of your page, avoiding the paper-out condition.

- Use a DIP switch on the printer to deactivate the paper alarm. On the Gemini 10X, switch #1 on the back serves this purpose. If your printer has DIP switches, see if one of them does likewise.

B. Franklin
Philadelphia, PA

\$22D Visible perforations—My printer's smoke-gray cover makes it hard to see the paper perforations, and, consequently, I found it difficult to align the printhead and the top of the sheet. I solved the problem by running a dark, felt marking pen over the points of all four corners of the folded paper. The ink soaks through the paper and makes it easy to see the perforations. Since they appear only on the outer edge of the paper, which is torn off and discarded, the ink marks have no effect on my final documents.

John B. Boninger
Rock Island, IL

\$22E Tractor-feed fodder—Some printers, like the 1525 and MPS-801, waste a sheet of paper every time they are set to top of form. Keep a clipboard handy, and, as you remove your printout from the printer, tear off that first blank sheet and add it to the clipboard. Clean, full-size sheets have plenty of uses around the house.

Phillip D. Deem
Indianapolis, IN

\$22F Printing stencils—Dot-matrix printers strike hard enough to cut a mimeograph stencil. I've used

Continued on p. 100.

From p. 10.

Double-strike mode to get the best copies and have been well-pleased with the results of my word processor/computer printer combination.

Ed Schutz
Utica, MI

\$230 Making spirit masters—Spirit masters are used on the so-called "ditto" machines, found in countless schools, clubs and churches. Use your printer to make the master, and you've got a very low-cost, time-efficient duplicating system. You'll have to make a few trial runs to optimize reproduction quality, since the printer must strike the paper with enough force to transfer the spirit ink onto the master.

Other printers may produce different results, but my Gemini 10X works best in Emphasize mode; Double-strike mode transfers too much ink, which results in filled-in letters. After printing, each of my masters makes about 75 copies. If I need more, I just print more masters!

Ed Schutz
Utica, MI

\$231 Printer lockup fix—If a program locks up while it is trying to communicate with the printer, don't panic. Turn the printer off, then back on, and you'll probably clear the lockup.

Michael P. Rogalski
Monrovia, CA

\$232 1526 secrets—The mechanism in this printer is the same as that in the Mannesmann Tally Spirit-80; Spirit-80 ribbons work perfectly in the 1526. The lever at the right of the platen is to adjust for paper thickness. Normal position is toward the platen; if you are doing envelopes or three-part forms, or if your print is smudging, move it toward the front of the machine.

Quinze Vingetsex
West Chester, PA

\$233 PaperClip and the DPS1101—Commodore's nice daisywheel printer can easily be used with the PaperClip word processor, if you know the secret. First, you must switch DIP switch #3. Then use the DAISY-A-NLF printer file. This will handle 5-pitch, 10-pitch, 12-pitch, 15-pitch, boldface, underline and sub/superscripts.

If you want to use shadow printing as well, you must run the printer setup program. When it asks you to load your previous file, load the DAISY-A-NLF file. For "italics on," use codes 27, then 87. For "italics off," use 27, then 38. Please realize that you can't get italics with a daisy-wheel—you get shadow printing instead.

Thomas F. Trocco
New York, NY

\$234 Printer special features—Many non-Commodore printers have wonderful special features that can be used with commercial programs. To enable these features, one must often send several commands to the

printer prior to loading the program. A good way to handle this without having to remember the commands is to include them in a small loader program that sends them, then loads the main program using dynamic keyboard techniques (see \$23A).

For example, I use the following program to set my Epson to Double-strike mode with a five-line skip over perforations, after which it loads the PractiCalc program.

```
10 Q$=CHR$(34):OPEN 4,4
20 PRINT#4,CHR$(27)";G"
30 PRINT#4,CHR$(27)";N"CHR$(5)
40 PRINT
50 PRINT"LOAD" Q$ "PRACTICALC" Q$ ".8,1{2 CRSR UPs}";
60 POKE 631,13:POKE 198,1:END
```

Donald D. Fick
Muscatine, IA

\$235 Plotter as printer—Commodore's slick little plotter can double as an 80-column word processing printer. Before loading your word processor, run the following driver program.

```
100 OPEN 6,6,6:PRINT#6,1:REM UPPER/LOWERCASE
200 OPEN 3,6,3:PRINT#3,0:REM 80 CHAR/LINE
300 OPEN 2,6,2:PRINT#2,0:REM BLACK INK
```

You must then set your word processor to send its text to device #6, rather than the usual 4 or 5. If you have PaperClip, run the MERGE PRTFIL-D program and merge PaperClip with the 1525-P-ALF printer file. Then run the PRINTER SETUP-D program and set the printer device to #6. Save this newly modified PaperClip program. When you run it, your printer device will automatically be set to 6.

We like to use the 1520 as a portable printer, and its small size more than makes up for its tiny little letters.

Thomas F. Trocco
New York, NY

\$236 Easy Script Oki-magic—If you have used the Okimate 10 with Easy Script, you may have been dismayed to find that the gaps for page-skipping are twice as wide as they should be and that the error increases with every printed page. The trouble is that both Okimate and Easy Script have an automatic page-skip feature. The solution is to disable the Okimate's automatic perf-skip by executing the following line before loading Easy Script.

```
OPEN 1,4,0:PRINT#1,CHR$(27)";B"
```

Charles L. Baker
Topeka, KS

\$237 Olivetti PR2300 ink—Thousands of Commodore owners also own this printer, and most of them have run out of dry ink ampules. I searched for ampules for almost a year and finally gave up trying to find them. Out of desperation, I tried refilling my old ones with the extra-fine graphite power sold as a lubricant at hardware stores. It really works great and has given me no trouble.

Jim R. Williamson
Carrollton, TX

\$238 Simple cursor for GET—The various methods of establishing a flashing cursor to use with the Get statement are sometimes unsatisfactory for reasons of complexity or their tendency to leave white squares on the screen. This easy way uses a non-blinking cursor and is perfectly fine for my purposes. Perhaps you will like it, too.

```
100 PRINT "{RVS ON}{SPACE}{RVS OFF}{CRSR LF}";
110 GET A$: IF A$="" THEN 110
120 IF A$=CHR$(13) THEN PRINT "{SPACE}"; CHR$(20);
    GOTO 150
130 PRINT A$;
140 GOTO 100
150 Rest of program goes here
```

Osp Viggosdottir
Reykjavik, Iceland

\$239 Line tack—When you're debugging a program and get a Syntax error in a line that appears correct, try listing the line by itself. (Example: LIST 120.) If you get two lines instead of one, you have what I call *line tack*. It's caused when you type a line exactly 40 characters long, then type another line below it, without first pressing the return key.

The computer interprets this as one long line and executes it correctly until it encounters the second line number, which causes the error. The cure is to type both lines again, being careful to press the return key at the end of the first one. If you're skillful with the screen editor, you can list the offending line twice, then edit both listings to achieve the desired effect.

Rickey Bartlett
Plumerville, AR

\$23A Dynamic keyboard explained—It's easy to make a program simulate keypresses, with truly magical effect. The technique has been around at least since 1978 and is commonly called *dynamic keyboard*. The basic idea is to have your program Poke the CHR\$ values of one or more characters into the *keyboard buffer* area of memory. When the program is finished, the computer will print the Ready prompt, then act like you've typed the Poked characters.

The keyboard buffer occupies the ten memory locations from 631-640 decimal. It works in conjunction with location 198, which must always hold a count of the characters Poked into the buffer. For the Plus/4 and C-16, the buffer runs from 1319-1328, and the counter is in 239. Run this little program to see the principle in action:

```
10 FOR I=1 TO 10: POKE 630+I,65: NEXT I: POKE 198,10: END
```

The Plus/4 version is:

```
10 FOR I=1 TO 10: POKE 1398+I,65: NEXT I: POKE 239,10: END
```

You should get the Ready prompt, followed by a series of ten As (CHR\$(65) is A). Change the 65 to 64+I, and you'll get the first ten characters of the alphabet. Change the 10s to smaller numbers, and you'll get fewer letters.

Dynamic keyboard's *real* magic comes when your program prints an executable statement on the screen, then makes the Ready prompt appear on the line above it. If the buffer holds a 13, it's just like putting the cursor on that statement and hitting the return key; your computer will do whatever the statement tells it to.

Clever programmers can print up to *ten* Direct mode lines, with proper spacing between them, then put CHR\$(13)s into the buffer, causing all those lines to be executed. The key to success is careful placement of the screen commands and careful positioning of the cursor at the moment the program ends.

R.E. Peat
Pittsburgh, PA

\$23B Disk labels—To give my disks individuality and character, I remove the manufacturer's label from the upper-left corner, then hunt through magazines and other literature for suitable material to cut out and paste in its place. It's amazing what can be found to make your disks distinctive and easy to find in a file.

Ken Williams
Wahroonga, NSW
Australia

\$23C VIC Super-expander disable—Due to its many added commands, this popular plug-in restricts the variable names you can use in your programs. Moreover, programs that use the function keys will not run properly, if at all. You can deactivate the Super-expander's extra features, leaving its 3K of RAM expansion intact, by entering SYS64818 after a reset or after turning on the computer. The technique also works if additional RAM expansion has been installed, but, of course, the 3K is not then available to Basic.

Daniel L. Scheftner
Iwakuni, Japan

\$23D Short-wave computing—Hams and SWLs can find a Commodore User's Net on Saturdays at 1500 Eastern Time on 7.228 MHz, lower sideband. All licensed hams are invited to participate.

Warren Flynn, WB4ZOJ
Temple, GA

\$23E Batteries excluded—If you're tempted to buy rechargeable ni-cads for all those battery-powered items around the computer room, you might want to think again. While they're great for powering toys, and so on, ni-cads don't hold a charge very long, which makes them a liability in seldom-used items like flashlights. And they have a disturbing tendency to fail completely after a year or so, leaving you with an incomplete set of batteries. Did you ever try to buy *one* AA-size ni-cad?

L.F.S.

RUN

Exclusive!
Meet Commodore's New,
Exciting Amiga

September 1985 A CWC/I Publication

MICROS IN THE CLASSROOM—

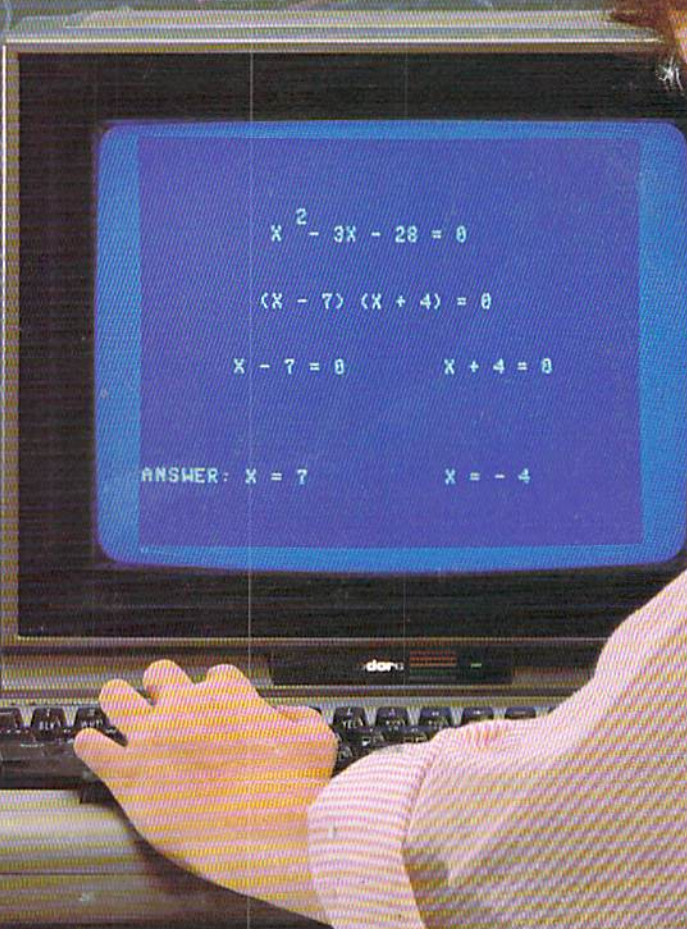
Can Commodore
Make the Grade?

AN INTERVIEW
WITH COMMODORE'S
EDUCATION DIRECTOR

MAKING COURSES
BY COMPUTER

Plus:
RUN'S CHECKSUM
OR BUG-FREE
PROGRAM ENTRY

PAY YOUR BILLS
THE EASY WAY



09



Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Every month, Magic brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). We typically pay \$10 for each trick accepted. Really super ones get \$20–\$50. Send your tricks to:

MAGIC
 c/o Louis F. Sander
 PO Box 101011
 Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a Trick Writer's Guide. International readers may omit the stamp.

As you read these words, work on RUN's second Special Issue is already under way. Our plans are to reprint all of 1985's tricks, indexed and grouped by subject matter, plus over a hundred brand-new items. Get your orders in early, since we expect another sellout.

Attention all programmers: If you're seeking fame and fortune, send your short programs to Magic. As you can see from this month's trickery, we look for useful or entertaining items whose listings fill less than one screen. Our readers love utilities, but we publish good software from any subject area.

\$23F Klawretaw—We don't know who sent this, but it's well worth keying in. Can you tell what it does before running it?

```
10 REM KLAURETAW - UNKNOWN MAGICIAN
20 A$="KLAURETAW":FORA=9TO5STEP-1:B$=B$+MID
  $(A$,A,1):NEXT:B$=B$+B$+B$+B$
30 FORA=4TO1STEP-1:C$=C$+MID$(A$,A,1):NEXT
40 PRINTCHR$(147)CHR$(17)B$B$:FORJ=1TO35:PR
  INTCHR$(19)TAB(J)C$;:FORK=1TO5
```

```
50 PRINTCHR$(157):NEXT:PRINTTAB(J-1)CHR$(14
  5)" ":FORL=1TO100:NEXT:NEXT:GOTO40
```

Mystery Magician
 Secret City

\$240 Autostart programs for the C-64—

Here's a simple routine that adds the autostart feature to Basic programs on tape or disk. Type it in and run it, and if your Data statements are correct, you'll be asked to delete lines 11–13. Delete them, then save the program.

Now, when you want to save an autostart version of a program, just run Autostart and follow the instructions on the screen. Once it is saved, a syntax error message will appear on the screen; disregard it. At this point, your computer is in an altered state, so you must reset it or turn it off then back on.

Programs saved in this manner must be loaded using the form:

```
LOAD"filename",8,1
```

They will run as soon as they are loaded, with no further action from you. Because the autostart process puts characters onto the screen, it's helpful if the saved program clears the screen as one of its first operations. (If you're using tape, change the 8 to a 1 in the Load statement and in the screen message in line 80.)

```
10 REM AUTOSTART - BILL GIEL
11 FORX=1TO48:READY:CS=CS+Y:NEXT
12 IFCS<>5991THENPRINT"DATA ERROR":STOP
13 PRINT"DELETE LINES 11-13":END
20 FORA=679TO726:READB:POKEA,B:NEXT
30 Q$=CHR$(34):PRINTCHR$(147)CHR$(18)"TO MA
  KE AN AUTOSTART COPY OF A PROGRAM:"
40 PRINT:PRINT"LOAD YOUR PROGRAM, CLEAR THE
  SCREEN,"
50 PRINT"AND MOVE THE CURSOR TO THE BOTTOM
  LINE.":PRINT
60 PRINT"THEN ENTER THIS AS A SINGLE COMMAN
  D:":PRINT:PRINT"POKE43,166:";
70 PRINT"POKE44,2:POKE770,167:POKE771,2:SAV
  E"Q$"FILENAME"Q$",8"
80 PRINT:PRINTCHR$(18)** YOU MUST ALWAYS L
  OAD"Q$"FILENAME"Q$",8,1 **
90 DATA 169,147,032,210,255,169,082,032
```


Listing continued.

```
91 DATA 210,255,169,085,032,210,255,169
92 DATA 078,032,210,255,169,019,032,210
93 DATA 255,169,131,141,002,003,169,164
94 DATA 141,003,003,169,001,141,198,000
95 DATA 169,013,141,119,002,076,131,164
```

Bill Giel
Yonkers, NY

```
50 GET#2,HI$ : HI$=HI$+CHR$(0)
60 CLOSE2 : LA=ASC(LO$)+256*ASC(HI$)
70 PRINT"LOAD ADDRESS IS:" LA
80 PRINT"{4 SPACES}LOW BYTE IS:" ASC(LO$)
90 PRINT"{3 SPACES}HIGH BYTE IS:" ASC(HI$)
```

Mike Tranchemontaigne
Nashua, NH

\$241 Star Trek tip—This Sega game for the C-64 has a small bug that you can use to your advantage. The M key puts you into warp drive, which speeds you up and protects you from all enemies. When you lose warp drive energy, of course, you can no longer move faster, but that's where the bug comes in. As long as you hold down the M key, your invincibility persists. You can still use your phasers, photon torpedoes and non-warp engine power. Death to the treacherous Klingons!

David Bloyd
Reedley, CA

\$242 Input with default—Input parameters are often known in advance, but sometimes you may want to make a change. If the Input statement itself contains the most-used parameter, you can select it just by pressing the return key. If another parameter is desired, you merely type it in the usual way. Here's a simple example:

```
INPUT "DEVICE NUMBER{2 spaces}8{3 CRSR LFs}";D
```

The number 8 will appear under the cursor and can be selected by hitting the return key.

E. Dam Ravn
Olstykke, Denmark

\$243 Filename finder—On the C-64, SYS 62913 displays the name of the currently active file. Did you ever load a program or open a disk file, then later forget its name? Or have you saved something, then wondered what you called it? Try this magic SYS call, and the forgotten filename will materialize before your eyes! Usable in Direct or Program mode, it displays the filename at the current cursor position. JSR \$F5C1 is the machine language version.

Rick Crone
Jackson, TN

\$244 Load address finder—This short program finds the load address for any program saved on disk and is useful for investigating machine language files. It gives the load address plus the low byte and high byte of that address—all in decimal form. Since many machine language programs are executed by a SYS command to their first byte, knowing the load address is often the same as knowing the enabling SYS.

```
10 REM LOAD ADDR - M. TRANCHEMONTAIGNE
20 INPUT "{7 SPACES}FILENAME";F$
30 OPEN2,8,2,F$+"",P,R"
40 GET#2,LO$ : LO$=LO$+CHR$(0)
```

\$245 End address finder—You can find the ending address of a program on disk or tape by using Verify, then Peeking the pointer at 174-175. To find the highest address into which the program loads, verify it, then enter:

```
EA = PEEK(174) + 256*PEEK(175) - 1:PRINT EA
```

If you also know the load address, you can find the length of the program by:

```
Length = 1 + End Address - Load Address
```

Douglas Marshall
Bell, CA

\$246 Renaming disks—The 1541 New command is capable of more than most people think. The command

```
N0:diskname,id
```

completely formats a disk, giving it the name *diskname* and the ID *id*. If you use the abbreviated command

```
N0:diskname
```

you erase the directory without doing the time-consuming complete reformatting process. But if you use the command

```
N0:anothername
```

you'll end up with a blank disk called *anothername*. It will still have its original ID, but it most surely will have a brand-new name.

Charles Lavin
Coral Gables, FL

\$247 Directories on non-CBM printers—Users of non-Commodore printers may have trouble printing directory listings, since the reverse-field characters in the first line can be interpreted as printer-control characters. The way around the problem is to remove the reverse-field characters.

Loading the directory, then pressing zero and the return key will delete the problem line. But your listing will have no disk name. Alternatively, leave line 0 in the directory, but replace both quotes with apostrophes or some other character, and then hit the return key. Your printed directory should turn out all right. If problems persist, you can retype line 0 without the quotes or reverse field, and enter the corrected line by pressing the return key.

Gary Fields
Asheville, NC

From p. 10.

\$248 Encrypted filenames—You can make it difficult for others to load your secret programs by using unorthodox dummy characters to start their names. It doesn't matter which characters you use, and you don't even have to remember them, since your loading method will decrypt them automatically.

What's important is to use the same number of dummy characters each time—perhaps something in the range of 3–5. The best characters to use are those in the ranges CHR\$(0) to CHR\$(31) and CHR\$(128) to CHR\$(159). Also try CHR\$(20), the delete character, which really confuses directory listings. A good example is:

```
SAVE CHR$(143)+CHR$(20)+"REAL NAME",8
```

The secret to loading such programs is to use the question mark wild-card character. If you use four dummies in naming the file, use four question marks in loading it. If you used three, use three, and so on. In our example, you would use:

```
LOAD "??REAL NAME",8
```

Cornelius Vanderbilt
New York, NY

\$249 Fortune cookie—This generates some interesting messages, which *may* be useful in predicting the future. In tests against tea leaves and an out-of-round crystal ball, its output was consistently equivocal. Anyway, it's a highly amusing program. For nonstop entertainment, put a delay at the end, then skip a line and loop back to 730.

```
700 REM FORTUNE COOKIE - MARCO BALAGUER
710 FORN=1 TO 10: READ A$(N), B$(N), C$(N), D$(N):
NEXT S$: S$=CHR$(32)
720 DEF FNA(X)=INT(RND(0)*10+1)
730 A=FNA(X): B=FNA(X): C=FNA(X): D=FNA(X)
740 PRINT S$A$(A) S$B$(B) S$C$(C) S$D$(D)
750 DATA THEY, WILL, FIND, HER, HE, WON'T, EXPOSE
, PLANS
760 DATA RIVAL, DID, IGNORE, CONSEQUENCES, STRA
NGER, MIGHT, LOVE, YOU
770 DATA SHE, MIGHTN'T, ADMIRE, ANOTHER, YOU, DI
DN'T, KNOW, THEM
780 DATA FAMILY, CAN'T, PROTECT, US, WE, CAN, DEN
Y, IT
790 DATA CHILD, MAY, DESPISE, MONEY, SUPERIOR, C
OULD, ACCEPT, HIM
```

Marco Balaguer
Brooklyn, NY

\$24A Day of week routine—This routine has its origins in home computer antiquity, since a similar program appeared in *PET User Notes*, way back in 1978. It will print the day of the week for any date from March 1, 1900 through February 28, 2000. It does not destroy the date and may be used as a subroutine after the WDS array is initialized. When you input the date, please use the numeric form of the month, day and year, using two digits for each and separating them with commas.

```
10 REM DAY OF WEEK ROUTINE
20 DATA SUN, MON, TUE, WED, THU, FRI, SAT
30 FORJ=0 TO 6: READ WD$(J): NEXT
40 INPUT "MONTH, DAY, YEAR"; MN, DY, YR
50 CY=YR:M=MN-2: IF M<1 THEN M=M+12: CY=CY-1
60 Y=CY-INT(CY/100)*100
70 WD=Y+INT(Y/4)+1+DY+INT(2.6*M-.1999)
80 WD=WD-INT(WD/7)*7: PRINT WD$(WD)
```

R.E. Peat
Pittsburgh, PA

\$24B Screen Poke Finder—When you're Poking characters to the C-64 screen, determining the Poke addresses is *not* part of the fun. That's why I created the Poke Finder program. Type it in and run it, and if your Data statements are perfect, you'll be asked to delete some lines. Delete them, then save the program.

When you run it from now on, it will seem to disappear. Then you're free to program or to cursor around the screen, leaving, if you're skillful, a trail of truth and beauty. To find the memory locations for any screen position, just move your cursor there and press the f1 key. Like magic, the numbers will materialize on screen! And since Poke Finder doesn't interfere with Basic, you can use its services while writing other programs. Simultaneously pressing the run/stop and restore keys kills Poke Finder, while SYS49152 resurrects it.

```
1 REM SCREEN POKE FINDER - CHRIS CONLEE
2 FORJ=1 TO 180: READ K: CS=CS+K: NEXT
3 IF CS<>25844 THEN PRINT "DATA ERROR": STOP
4 PRINT "DATA OK. DELETE LINES 2-4, THEN SAV
E.": END
10 FORJ=49152 TO 49331: READ K: POKE J, K: NEXT: SYS
49152: NEW
11 DATA 120, 169, 013, 141, 020, 003, 169, 192
12 DATA 141, 021, 003, 088, 096, 072, 138, 072
13 DATA 152, 072, 165, 215, 201, 133, 240, 003
14 DATA 076, 172, 192, 056, 032, 240, 255, 140
15 DATA 180, 192, 142, 181, 192, 169, 000, 141
16 DATA 182, 192, 169, 004, 141, 183, 192, 224
17 DATA 000, 240, 020, 024, 169, 040, 109, 182
18 DATA 192, 141, 182, 192, 169, 000, 109, 183
19 DATA 192, 141, 183, 192, 202, 208, 236, 024
20 DATA 173, 180, 192, 109, 182, 192, 141, 182
21 DATA 192, 169, 000, 109, 183, 192, 141, 183
22 DATA 192, 024, 173, 182, 192, 105, 000, 141
23 DATA 184, 192, 173, 183, 192, 105, 212, 141
24 DATA 185, 192, 024, 162, 000, 160, 024, 032
25 DATA 240, 255, 169, 083, 032, 210, 255, 169
26 DATA 061, 032, 210, 255, 174, 182, 192, 173
27 DATA 183, 192, 032, 205, 189, 169, 044, 032
28 DATA 210, 255, 169, 032, 032, 210, 255, 169
29 DATA 067, 032, 210, 255, 169, 061, 032, 210
30 DATA 255, 174, 184, 192, 173, 185, 192, 032
31 DATA 205, 189, 024, 174, 181, 192, 172, 180
32 DATA 192, 032, 240, 255, 104, 168, 104, 170
33 DATA 104, 076, 049, 234
```

Chris Conlee
Moro, OR

\$24C Equipment turn-on sequence—Much has been written about the proper order in which to turn

your computer and peripherals on and off. All sorts of disk hangups and printer problems are involved, and it's difficult to find the best turn-on sequence for every situation.

I struggled with these problems for years before discovering that if a reset button is connected to the serial bus, turn-on sequence doesn't matter. If you turn everything on, then press your reset button, the problems magically disappear. Apparently, the reset button causes the serial bus to normalize all the peripherals, regardless of when they have been turned on. This interesting experience represents one more reason to install a reset button on your computer.

Karl T. Thurber, Jr.
Millbrook, AL

\$24D Video monitor tips—My monitor is a green monochrome without a speaker, which is little help when a program involves color and sound or both. But since the green monitor is plugged into the video connector on the back of my 64, the TV connector is vacant. I run a long cable from the TV connector to the switchbox on the back of my color TV. When a commercial comes on, I can do my color work without interrupting the family's viewing. The 64 can simultaneously drive both the monitor and the TV.

Of course, the cable connecting my green screen to the

computer has a separate audio line. I patch it into my stereo receiver, so I can play the 64's sound. I frequently use this setup to record C-64 sound onto a cassette or reel-to-reel tape.

Stephen M. Zapytowski, Sr.
Beaverton, OR

\$24E Power supply repairs—Trick \$1F1 gave a hint on replacing the 3052P voltage regulator, which often fails in Commodore power supplies. Unfortunately, the suggested replacement isn't as husky as the original and may be subject to failure itself. Many electronics dealers handle the ECG line of replacement ICs, and ECG makes an exact, pin-for-pin replacement for the 3052P. The part number is ECG1934 and costs about \$7. If your ECG dealer doesn't stock the part, he should be glad to order it for you.

Bob Wingerter
Raceland, KY

\$24F Dummy modem—If you're trying to correct modem problems, learning to telecommunicate or debugging your own terminal software, there's an easy, low-cost way to go on-line. Get a friend to bring his computer and modem over, then connect your modems directly together, completely bypassing the telephone system. You can use any modular extension cord for this purpose, including the one that connects your own telephone to the wall.

You'll have to ensure originate/answer compatibility between the two modems, but that can be as simple as flipping a switch. Once you are in communication, this system completely eliminates phone-line problems. And having both terminals in the same room gives wonderful feedback to the operator, since keyboard entries on one can be viewed immediately as they are received and displayed on the second.

Chuck McGaffin
Ballston Lake, NY

\$250 Recordkeeping hint—I keep track of all my machine language programs in a pocket-sized loose-leaf notebook available at most department stores. The pages are 3 3/4" x 6 1/4", which is large enough to hold what I need, yet small enough to fit in a corner of my desk drawer. The program name goes on the top line of each sheet, followed by loading information, SYS calls and so forth. I use both sides of the lined sheets, so I never run out of room. I use masking-tape tabs to divide the book into meaningful sections, and the looseleaf system keeps everything safely together, while enabling me to move pages when necessary.

Since Basic programs can be listed on the screen, with numerous REMs to explain them, I seldom enter one in my book. But for all those unlistable machine language programs, with all their versions, SYS calls and options, I wouldn't be without my little book.

L.F.S.

Circle 65 on Reader Service card.

What should you expect for \$35? Everything.

The Intelligent Software Package for C-64™, VIC™, SX-64™, C-128™, LCD™, Plus/4™, 16™, B-128™, and PET/CBM™. An integrated home/business/educational package of 25 programs [totaling over 51 pages of source code] that will put your Commodore to work right now, in your home or office; all on disk or tape at the ridiculous price of \$35. One customer writes: "...accolades for the authors. This is as slick a deal as I have seen and more than adequate for all except fancy presentations. The best thing is the ease of use..." The package includes:

Database: A complete multi-keyed fixed-record-length data base manager. Sort or select (using all relational operators: =, >, <, AND, OR, NOT, wild card) on any field; perform computations on numeric fields. Any operation can be performed on all, or only selected records. All fields completely user-definable. Can be used for any number of tasks, including accounting, mailing lists, inventory control, record, tape, or book cataloging, expense account maintenance, or as an electronic rolodex. Even if you use your Commodore for nothing else, this program alone might justify its expense.

Word Processor: A full-featured menu-driven word processor including: very fast file commands, screen editing, text locating and full control over margins, spacing, paging, indentation, and justification. "...well done and highly functional... Provides an excellent alternative to the high priced word processors... this is an excellent buy. Highly recommended." —Midnite Software Gazette. "Provides good basic features." —Compute's Gazette.

Copycalc: An electronic spreadsheet. Turns your Commodore into a visible balance sheet; includes screen editor. "Excellent program for budgeting, estimating, or any math-oriented use... well worth the money. Highly recommended." —Midnite Software Gazette.

Also included: **ReportGen, ReportMerge** (interface W/P with Database to create form letters, statements, invoices, mailing labels, other reports.); **Baseball Statistician** (compiles batting statistics for a baseball league); several W/P utilities, including **Index** (indexes W/P's text files); several Database utilities, including **DBmerge** (facilitates multi-file database applications.), and **DBStat** (analyzes D/B files); a programming utility, **ASCII**, which converts text files (program listings) into program files; also **Checkbook, Inventory, Paper Route, Loan Analysis, Breakeven Analysis, Depreciation, Labeler, File Copier**; more.

Versions of the package are available for every Commodore computer having a minimum of 10K RAM. All programs will support tape, disk, and printer. Price includes documentation and shipping; Calif. residents add 6%. Add \$3 for credit card, COD, 8050 disk, or tape orders (disk only for Plus/4™ and 16™). No personal checks from outside USA. This ad is the catalog; a sampling of program output is available for \$2.

Intelligent Software
Quality Software since 1982

Box A Dept. R-4
San Anselmo, CA 94960
(415) 457-6153

**ELECTRONIC
MAIL HAS ARRIVED!**

The Home User's Guide to Commodore Computing

U.S.A. \$2.95
CANADA \$3.95

RUN

October 1985 A CWC/I Publication

BECOME A COMPUTER ARTIST

CREATE YOUR OWN
GRAPHICS FOR

- HOME
- GAMES
- EDUCATION
- BUSINESS

Plus:
DISCOVER THE MAGIC
OF SPRITELY DESIGNS

A SOLUTION
TO THE C-128
MONITOR QUESTIONS

POWERFUL NEW
PROGRAMS
FOR THE C-128





Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Every month, *Magic* brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). *RUN* will pay up to \$50 for each trick accepted. Send your tricks to:

MAGIC
 c/o Louis F. Sander
 PO Box 101011
 Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a *Trick Writer's Guide*. Readers outside the United States may omit the stamp.

Although this *RUN* is dated October, most of you get it in the dog days of September, so this issue includes alchemy appropriate to both months. And, speaking of seasonality, we like to print tricks with a seasonal theme, but we never get enough of them. So, if you'd like to be a published magician, work up some seasonal trickery for us and your fellow readers. Remember our deadline—three months prior to publication.

RUN's 1986 special issue is coming along fantastically now, and we know you're going to like it. It contains a reprint of 1985's *Magic*, plus a wealth of new material, all sorted and indexed in various ways.

\$251 PET Emulator—Once upon a time, most Commodore software was written for the famous PET computer. In those fond and bygone days, a powerful program called PET Emulator made the software-poor C-64 compatible with the extensive library of PET-based programs. The emulation idea was a dog, but it gave you something to do until better software appeared.

The amusing program below is much less powerful, but much more friendly. It *does* faithfully emulate a plug-compatible Commodore PET, and it works on all Com-

modore machines, including the C-128. Type it in right now and stand by for a pleasant surprise. Don't overlook the numerous spaces that are imbedded in the graphics strings; they appear as extra wide gaps adjacent to the curly brackets.

```
100 REM PET EMULATOR - LOUIS F. SANDER
110 DIMA$(20):A$=" {CTRL 9}":A$(15)="{CTRL
3}{CTRL 0} ."
120 A$(16)="{SHFT LB.} {CMD *}":A$(17)="{C
OMD G} {CMD M}":PRINT CHR$(142)
130 A$(18)="{CTRL 0}{CRSR LF}{CMD C}{CTRL
9}{CMD G}{SHFT W}{CMD M}{CTRL 0}{CMD
V}":A$(19)=A$(17)
140 A$(20)="{3 CMD Is}{CTRL 1}":A$(0)="{SH
FT CLR}":B$="{SHFT J}"
150 C$=B$+"{2 CMD Is}{SHFT Q}{CRSR DN}{4 C
RSR LFs} {CMD V}{CMD C} {CRSR UP}":D$
="{CRSR DN}{CRSR LF} {CRSR UP}"
160 E$="{HOME}{19 CRSR DNs}"
170 F$=E$+"{13 CRSR Rts}":G$="{SHFT U}"
180 POKE53280,1:POKE53281,1:FORJ=0TO20
190 PRINTSPC(16)A$(J):NEXT:PRINTESC$
200 FORJ=1TO13:FORK=1TO200:NEXT
210 C$=D$+C$:PRINTESC$:NEXT:FORJ=1TO10
220 FORK=1TO72:NEXT:PRINTF$G$
230 FORK=1TO68:NEXTK:PRINTF$;B$:NEXT
```

Louis F. Sander
 Pittsburgh, PA

\$252 Halloween disk devilment—For a real trick or treat, prepare a disk with a number of interesting programs on it, and tell a friend you're going to give it to him as a Halloween treat. Make sure it contains the following one-line program, named "DO NOT RUN ME."

```
10 OPEN 15,8,15,"N0:I WARNED YOU!,TS":CLOSE15
```

The trick comes when he runs the forbidden program, which erases everything on the disk!

Bertram Schulman
 Valley Stream, NY

\$253 Address books—If you wish to have a neat, up-to-date and correctable address and telephone book, there's an available framework in *Practicalc* or any similar spreadsheet.

Using the spreadsheet columns, you can enter, in any

order, names, phone numbers and personal details. The columns can then be sorted alphabetically or numerically by Practicalc, and changes or corrections can be handled with ease.

Ian Haynes
Westville, South Africa

\$254 C-128 monochrome monitor—The manual doesn't say so, but it's easy to use a monochrome monitor on the C-128's beautiful, 80-column output. The signal is available on the computer's rear-panel RGBI connector, which mates with any male DB-9 plug, such as the Radio Shack 276-1537. Connect the center wire of your monitor's video cable to pin 7 of the DB-9, and connect the shield to pin 1 or 2.

If you put the appropriate connectors on your monitor cables and cut them to the proper length, you can facilitate switching your monitor between the 80- and 40-column outputs on the 128.

Margaret Ittel
Los Angeles, CA

\$255 TV set switches—If you have a computer and a video game machine, you know how frustrating it is to constantly be connecting and reconnecting the switch boxes. My suggestion is to connect all the switch boxes to the TV set, leaving each external device connected to its own box. When you want to use a component, just switch its box to the computer position, leaving all the others in the TV position. When you want to change components, just turn the first one to TV and the second one to computer.

Michael Peterman
Lebanon, OR

\$256 Screen reverser—The accompanying C-64 program lets you reverse the entire screen by executing a simple SYS. Characters in normal video are changed to reverse video, and those in reverse are changed to normal. Because of the speed of machine language, the change is instantaneous.

To use the feature in a program, just execute lines 30-34 one time, then execute SYS 52992 whenever you want to reverse the screen. Some uses might be a flashing screen as a reward in an educational program, a flashing arcade game screen or even a flashing sign. Use your imagination and have fun!

```
1 FOR Y=1 TO 27:READ Z:CS=CS+Z:NEXT
2 IF CS<>4345 THEN PRINT "DATA ERROR":STOP
3 PRINT "CHECKSUM OK. DELETE LINES 1-4,"
4 PRINT "THEN SAVE THE PROGRAM.":END
10 REM SCREEN REVERSER - RICHARD MIU
20 REM SYS52992 REVERSES THE SCREEN
30 FOR J=52992 TO 53018:READ K:POKE J,K:NEXT
31 DATA 169,000,133,251,169,004,133,252
32 DATA 162,004,160,000,177,251,073,128
33 DATA 145,251,200,208,247,230,252,202
34 DATA 208,240,096
```

Richard Miu
Mansfield, OH

\$257 Easy Input filter—Many real-world problems only make sense if the input data is made up of non-negative integers. For example, when inputting the number of items in an inventory, you must make sure there are no negative numbers or fractions.

Of course, the programmer's sacred duty in these cases is to trap erroneous input responses before they can cause problems. Here's an elegant input filter that excludes both fractions and negative numbers. Notice how simple it is and how it does its job without resorting to Boolean operators.

```
10 INPUT "HOW MANY RABBITS IN THE HAT?":N
20 IF INT(ABS(N))<>N THEN 10
30 Rest of program goes here.
```

Thomas Henry
N. Mankato, MN

\$258 Program indentation—If you've ever tried to indent your program lines to clarify program structures like For...Next, you've seen that Basic removes all leading spaces. You can override this by entering POKE 129,1. That little Poke causes the C-64 or VIC to remove CHR\$(1)'s instead of spaces!

The trick works in Program mode, but it affects Direct mode, too, because it prevents you from using spaces inside your commands. If you use them, you'll get a Syntax error. To return things to normal, enter POKE 129,32.

You can have more fun with this by Poking other character strings into 129. If N is the number Poked, the computer will delete any CHR\$(N) you try to enter in a program or Direct mode line.

Gustavo A. Tolosa A.
Mexico City, Mexico

\$259 Easydata—This C-64 program makes it easier to type Data statements by assigning new values to the backarrow, @ and asterisk keys. After you run it, the backarrow prints the shorthand abbreviation of Data, the @ key prints a comma and the asterisk executes a carriage return. These reassignments mean that your fingers never leave the top row of keys when entering long listings of numerical Data statements. The run/stop/restore combination will restore the keys to their normal functions, while SYS900 will reactivate the Easydata feature.

As always with Magic's machine language programs, we have included a checksum routine to make sure you enter your data items correctly. The first time you run the program, you'll be informed if you made a typing error or that everything's all right. If all is well, delete lines 1-4, then save the program in the usual way.

```
1 FOR Y=1 TO 83:READ Z:CS=CS+Z:NEXT
2 IF CS<>9260 THEN PRINT "DATA ERROR":STOP
3 PRINT "CHECKSUM OK. DELETE LINES 1-4,"
4 PRINT "THEN SAVE THE PROGRAM.":END
10 REM EASYDATA - MARK GRANZOW
11 DATA 120,162,145,160,003,142,020,003
12 DATA 140,021,003,088,096,072,165,215
13 DATA 201,095,208,021,169,157,141,119
14 DATA 002,169,068,141,120,002,169,097
15 DATA 141,121,002,169,003,133,198,240
16 DATA 038,201,064,208,016,169,157,141
```


From p. 10.

```
17 DATA 119,002,169,044,141,120,002,169
18 DATA 002,133,198,240,018,201,042,208
19 DATA 014,169,020,141,119,002,169,013
20 DATA 141,120,002,169,002,133,198,104
21 DATA 076,191,234
30 M=PEEK(55)+256*PEEK(56):A$=CHR$(17)
40 PRINT"WORKING":FORJ=900TO982:READK
50 IFK=191ANDM>32768THENPOKEJ,49:NEXT
60 POKEJ,K:NEXT:PRINTCHR$(147)
70 PRINT"SYS900 REASSIGNS THESE KEYS:"
80 PRINTA$"{LEFT ARROW}=DATA @=COMMA *=RETURN"
90 PRINTA$"STOP/RESTORE KILLS THEM."
100 SYS900:NEW
```

Mark Granzow
Carol Stream, IL

\$25A Commodore 1571 caveat—The new 1571 disk drive has many marvelous features, not the least of which is its ability to write on both sides of the disk. But if you've been notching your floppies for two-sided recording on a single-sided drive, be careful. When you use the 1571 to reformat those disks (or any others), it will automatically reformat both sides, even if you've write-protected your extra notch. If you aren't aware of that aspect of double-sided recording, you could unexpectedly wipe out a flip side.

William W. Weaver
Saxton, PA

\$25B Program load lock—If you save a program to disk using

SAVE "programname" + CHR\$(34),8

it will appear in the directory like any other program named "programname." However, it can't be loaded unless you use the "programname" + CHR\$(34) format. The result—nobody but you can load it!

Gary Wilson
Anthon, IA

\$25C Estimating program lines—It's useful to be able to estimate the number of lines in a program when you have to print out a listing. Depending on a program's compactness, each disk block holds about 8-10 lines. Therefore, a program that occupies 30 disk blocks probably has 240-300 lines, or about five pages.

Peter T. Crosby
Claremont, NH

\$25D Disk load and run—Here's a way to load and run a program from disk with the fewest typing strokes. Just type:

{CLR}{4 SPACES} "filename",8: {HOME}{SHFT RUN/STOP}

The program comes up running.

John K. Newell
San Antonio, TX

\$25E Programmable Run key—CHR\$(131) is equivalent to the shifted run/stop key. That is, it au-

tomatically loads and runs a program. Unfortunately, you cannot print CHR\$(131) and expect this result, but you can Poke it into the keyboard buffer as follows:

```
10 POKE 631,131: POKE 198,1: END: REM C-64 and VIC
10 POKE 1319,131: POKE 239,1: END: REM PLUS 4 and C-16
10 POKE 842,131: POKE 208,1: END: REM C-128.
```

When the line is executed, it will print the combination described above. If you're reasonably skilled at positioning on the screen, you can combine this and the previous trick to make a restriction-free programmable load and run.

Mark DuRussel
Midland, MI

\$25F Sequential file reader—The following program lets you examine the contents of sequential files on disk, making it very useful in debugging. Before entering the name of the file you want to inspect, be sure that that file is on the disk in your drive. Then enter its name and watch the screen as the program steps through your file.

Use the space bar to advance through the file or press any other key to terminate the program. When you reach the end of the file, the program terminates automatically.

```
100 REM SEQ FILE READER-LOUIS F. SANDER
110 OPEN15,8,15
120 PRINT:INPUT"{SHFT CLR}FILENAME TO READ"
;F$
130 OPEN2,8,2,F$+" ,S,R":PRINT:GOSUB280
140 PRINT"{CRSR DN}HIT SPACE TO SEE NEXT BY
TE,"
150 PRINT"HIT ANY OTHER KEY TO QUIT."
160 PRINT"{CRSR DN}{CTRL 9}BYTE#{2 CRSR RTs
}CHR${CRSR RT}ASCII"
170 J=J+1
180 GET#2,A$:A$=LEFT$(A$+CHR$(0),1)
190 A=ASC(A$):B$=A$
200 IF A$<CHR$(32) THEN B$="{CRSR LF}N/A"
210 IF A$>CHR$(127) THEN IF A$<CHR$(160) THEN B$=
"{CRSR LF}N/A"
220 PRINTTAB(3);J;TAB(7);A;TAB(14);B$
230 IF ST>19 THEN 260
240 GETC$:IF C$="" THEN 240
250 IF C$=CHR$(32) THEN 170
260 CLOSE2:CLOSE15:END
270 REM ** DISK ERROR CHECK
280 INPUT#15,EN,EM$,ET,ES
290 IF EN=0 THEN RETURN
300 PRINTEN;EM$;ET;ES:GOTO260
```

Louis F. Sander
Pittsburgh, PA

\$260 Easy Script directories—To get hard copies of a group of disk directories, load Easy Script, then go to Disk mode by pressing f4. Put the first disk in the drive and type +\$0, which will put its directory into the text section. For the next disk, move the cursor to the bottom of the first listing, then repeat the above steps. Continue until all directories have been added to the text section, then print them out just as you would any document.

With this method, all of Easy Script's editing and formatting commands are available for your use. Also, for



Hats off to a machine language teaching system that works.

Machine language programming isn't easy, but you don't have to be a genius to learn it. Despite what you may think after getting lost in umpteen "How to program the 6502" books. Let your Commodore 64 teach it to you.

The Visible Computer: 6502 is an award-winning blend of text and software that thousands have used to master the elusive skills of machine language.

It's an animated simulation of the 6502 microprocessor that lets you see with your own eyes how the 6502 works. You'll be using it as a debugging tool for years to come.

It's a tutorial. The 150 page manual is more than just instructions on running the simulator — it may just be the best book on machine language ever written.

It's 30 demonstration programs you'll work through with the 6502 simulator, from simple register loads to advanced graphics programs.

The Visible Computer: 6502

Send me The Visible Computer: 6502 for Commodore 64 (requires disk drive). I've enclosed \$39.95 plus \$2.50 postage and handling.

☐ Check or Money Order ☐ Visa ☐ Mastercard

Name _____

Address _____

City/State/Zip _____

Credit Card No. _____

Exp. _____



Software Masters™

P.O. Box 3638
Bryan, Texas 77805
(409) 822-9490

R Magic

the benefit of those whose printers can't handle that mode, the disk headers are not printed in reverse field.

R.S. Michaelis
Marietta, OH

\$261 Servicing the 1520 plotter—The Radio Shack CGP-115 printer-plotter is very similar to Commodore's own 1520. In fact, the paper transport, the pen transport and the electromechanical printing mechanism are identical on the two devices. Even though Radio Shack has discontinued the CGP-115, its operation and service manuals are still available, both under the same catalog number as the hardware, 26-1192. The operation manual doesn't relate to the Commodore plotter, but the service manual is very useful. It costs about \$8, once you convince the store manager to order it from Texas.

By the way, don't forget that the pens and paper for the Radio Shack unit are directly compatible with the 1520.

Dave English
Orange, CA

\$262 Serial bus extenders—Radio Shack sells all the parts needed to make extension cords for the Commodore serial bus. The cables you make can be male-male or male-female, depending on whether you want to use them by themselves or add length to existing cables. The male connector is #274-020, and the in-line female is #274-021. They sell for about \$1 each.

The wire for your cables can be cannibalized from the #276-1978 Joystick Extension Cord, available for under \$5. Remove the D-sub connectors from either end, and you're left with ten feet of thin, flexible nine-conductor cable.

When you make up your cables, be meticulously careful that you connect pin 1 to pin 1, pin 2 to pin 2, and so forth. It's easy to become confused, so I always double-check the tiny numbers molded into the body of the connector.

The joystick wire is not shielded, so your cables may increase the RF interference from your computer. There's also a chance that extra-long cables will cause timing problems on the bus. I've used two long, unshielded cables for several months, however, and I haven't had any problems.

Louis F. Sander
Pittsburgh, PA

\$263 Connector protector—If you make a cable for your user port, the 24 exposed pins on its edge connector can be easily shorted by metal objects sitting behind the computer. If you don't like to give disaster a chance to strike, cover the bare pins with the backshell from a 37-pin, D-style connector. Any backshell to which the connector attaches by screws, such as the Cannon DC 51214-1, should work. The cover not only protects the pins, but it provides a handle for inserting and removing the user-port connector.

Joel R. Robertson
Bonaire, GA

HARDWARE
BUYER'S GUIDE

The Home User's Guide to Commodore Computing

U.S.A. \$2.95
CANADA \$3.95

RUN

November 1985 A CWC/I Publication

COMMODORE TO THE RESCUE! ON THE TRAIL OF MISSING PERSONS

DISCOVER THE WORLD
OF CP/M ON THE C-128

COMMODORE TAKES A
QUANTUM LEAP

Program of the Month—
PRINT SCREEN PLUS

SPRITE CONTROL
ON THE C-128

C-64 SOFTWARE
FOR MODEM USERS

MISSING: JOHN CARR

AGE: 23 HEIGHT: 5'9" HAIR: BROWN

DATE LAST SEEN: 5 SEPT 1985

LOCATION LAST SEEN: NATIONAL PARK

PROBAB

PROBAB

PROBAB

PROBAB

PROBAB

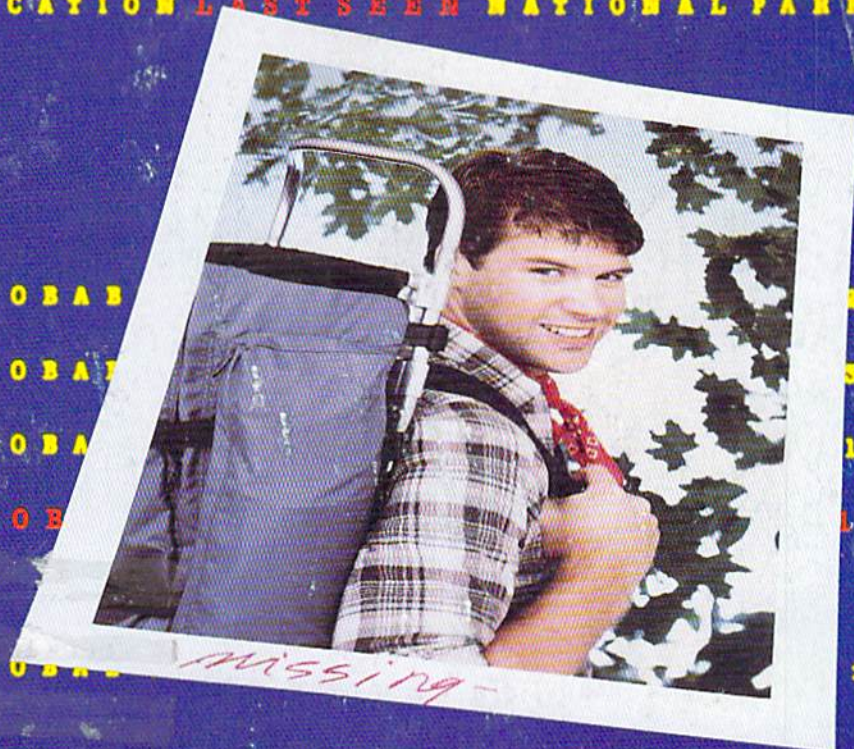
20%

35%

15%

15%

5%



WHICH AREA HAVE YOU SEARCHED?

POD FOR TEAM SEARCHING AREA 1?





Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.

Every month, Magic brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). RUN will pay up to \$50 for each trick accepted. Send your tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a Trick Writer's Guide. Readers outside the United States may omit the stamp.

In Magic's early days, we received and printed lots of one-liners—VIC and C-64 programs that could be written using a single line number. After a year or so, our readers exhausted the possibilities of the genre, and the flow of original ideas dried up. Well, a new day has dawned, and its name is Commodore 128! Not only are there new capabilities to show off in a one-liner, but also a single line number can be used on a 160-character line. So, once again, we're looking for one-line programs, and we expect to receive some great ones. The first of the new breed appears below.

\$264 Sprite shower—This one-liner for the Commodore 128 gives a dazzling and animated depiction of sprites and how they move. Not only is it fun to watch, but it's also a useful tutorial on C-128 sprites and how they're controlled.

```
10 FOR J=3584 TO 4095:POKE J,204: NEXT:FOR K=1 TO 8:
   SPRITE K,I,K:MOVSPR K,50*K*K: NEXT
```

Mary Lee McCafferty
Butler, PA

\$265 That which flies—Since this issue of RUN actually arrives before November first, the accompanying program will provide some timely entertainment, as well as some insight into sprite handling on the C-64. The Data statements contain a sprite, which the rest of the program Pokes into memory and animates.

```
10 REM THAT WHICH FLIES - SAMUEL SEWALL
20 POKE53281,6:PRINT"{SHFT CLR}{COMD 7}{4 C
   RSR DNS}"
30 FORS=832TO894:READT:POKES,T:NEXT
40 V=53248:POKE2040,13:REM SPRITE AREA
50 POKEV+21,1:REM DISPLAY SPRITE
60 POKEV+39,1:REM COLOR IT WHITE
70 POKEV+1,60:REM Y POSITION
80 FORJ=1TO255:POKEV,J:NEXTJ:REM X POS
90 LIST
91 DATA 000,000,000,000,064,000,000,064
92 DATA 000,000,096,000,000,096,000,003
93 DATA 252,000,000,240,000,000,096,001
94 DATA 255,225,204,063,255,112,124,240
95 DATA 192,248,251,000,112,252,000,225
96 DATA 248,000,001,252,000,003,102,000
97 DATA 028,099,000,120,097,192,248,096
98 DATA 000,176,112,000,032,000,000,000
```

Samuel Sewall
Salem, MA

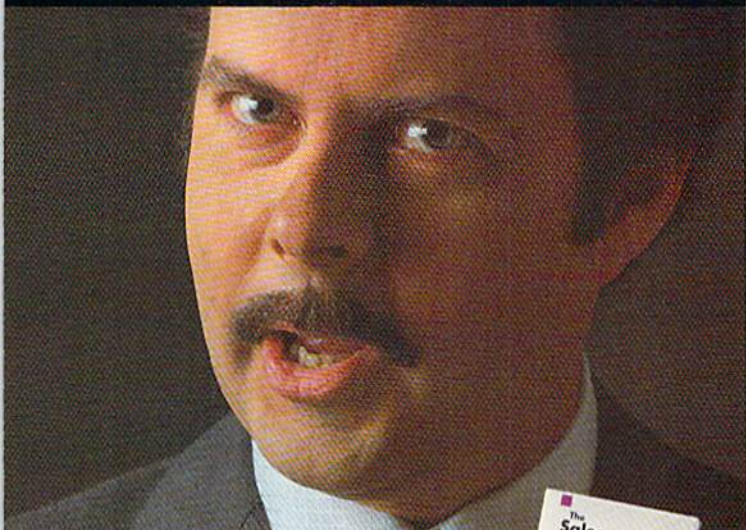
\$266 That which flies not—When you tire of the preceding trick, just change sprites by adding the following lines to the program. They will replace some lines you previously typed, so you'll really have two programs, each with its own title and Data statements and each with identical lines 20–90. Give thanks for the typing we've saved you.

Try sending your own best sprite to Magic. Put it in our standard form: as Data statements numbered 91–98, with leading zeroes to make each entry three characters long. Include a description of your sprite, but don't include Poking or animation routines.

```
10 REM THAT WHICH FLIES NOT - L. SANDER
91 DATA 000,000,000,005,000,000,042,160
92 DATA 000,085,080,000,042,168,000,085
93 DATA 080,000,170,168,000,085,240,000
94 DATA 175,252,014,095,255,223,047,255
95 DATA 253,095,255,249,039,255,248,003
```


AN IDEAL
BUSINESS GIFT.

"No, I don't think so..."



Using the Sales Edge,[™] you anticipated that, prepared a strategy, and got the sale. The Sales Edge is a sophisticated expert system package for Commodore.[®] Only from Info Designs. Call 800-445-INFO. Get the Edge. \$79.95*



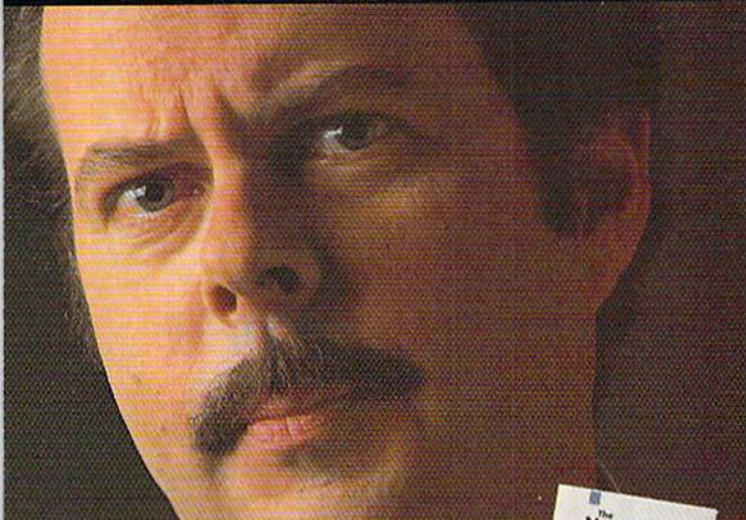
InfoDesigns[®]



Registered Trademark: Commodore—Commodore Electronics Limited. Trademarks: The Sales Edge—Human Edge Software Corporation—developed exclusively for Info Designs on the Commodore 64/128. *U.S. Currency.

A
USEFUL
GIFT FOR EVERYONE.

"So, you want a raise?"



You'd know what to say next with the Negotiation Edge.[™] It's one of the most sophisticated expert system packages for Commodore.[®] Only from Info Designs. Call 800-445-INFO. Get the Edge. \$79.95*



InfoDesigns[®]



Registered Trademark: Commodore—Commodore Electronics Limited. Trademarks: The Negotiation Edge—Human Edge Software Corporation—developed exclusively for Info Designs on the Commodore 64/128. *U.S. Currency.

Magic

96 DATA 255,248,001,255,224,003,127,128
97 DATA 001,130,000,000,227,192,000,000
98 DATA 000,000,000,000,000,000,000,000

L.F.S.

\$267 Typing Data statements—When typing a series of Data numbers, I place my fingers over the number keys, using them as the home row. Instead of inserting commas between the numbers, I use my thumb to enter spaces. Then, after entering the line, I go back to the beginning, this time proofreading my work and using the comma and cursor-right keys to put the commas where they belong.

I have found that I can enter data much faster this way, because of the modified touch system of typing and the accuracy that comes from the overall process.

K.W. McFall
Connersville, IN

\$268 Deek—Commodore machines store addresses in a low-byte, high-byte format, which means that to convert the address to decimal form, you must enter a statement similar to

20 SV = PEEK(45) + 256 * PEEK(46)

to get the value of the low byte plus the high byte multiplied by 256.

If your program does many such conversions, it may be convenient to set up a user-defined function to do them. Often the function is named DEEK (a mnemonic for Double PEEK). Here it is:

10 DEF FN DEEK(A) = PEEK(A) + 256 * PEEK(A + 1)

When you want to find a two-byte address whose low byte is at NN, you enter

20 SV = FN DEEK (NN)

Notice that the dummy variable name used in the DEF FN statement need not be used when you call the function itself.

William Keith Prusaczyk
Athens, GA

\$269 Improving on INT—The Basic function INT(X) is very useful, but sometimes you want the integer closest to X. (INT works by a kind of truncation, not by rounding off.) The simplest way to get the rounded value is by the formula INT(X + 0.5).

This works for both positive and negative numbers, but a problem still remains, since

INT(+3.5 + 0.5) = 4 and INT(-3.5 + 0.5) = -3

You can cure this by defining and using a function such as

DEF FNI(X) = SGN(X)*INT(SGN(X)*X + 0.5)

Jerry Bridgman
Madison, WI

\$26A Quote mode tip—When a quotation mark is printed to the screen, the value of memory lo-

cation 212 (C-64 and VIC) is changed from its normal 0, and the computer goes into Quote mode. In Quote mode, of course, cursor controls and other control characters print as reverse-field graphics symbols. If you print the quote mark from within a program, but want to avoid going into Quote mode, just enter POKE 212,0.

Joseph R. Charnetski
Dallas, PA

\$26B Memory Scope—The accompanying program will display one page of memory at the top of your computer's screen. Unlike a machine language monitor, the Memory Scope display changes along with the contents of memory, letting you see what happens as keys are pressed or Basic statements are executed.

The main listing below is a Memory Scope for the C-64. The others are the changes that must be made to accommodate the indicated machines. If you use one of these machines, you should type in the C-64 version, then add the changed lines as shown.

A memory page is a 256-byte block of memory, and pages start at integral multiples of 256. The pages with low numbers and those with high numbers are the most interesting to explore; there are no pages numbered greater than 255. To find the page number of any address, divide it by 256 and drop everything after the decimal point.

In the display, the characters have their screen Poke values: @ = 0, A = 1, B = 2 and so on. A complete listing appears under Screen Display Codes in the back of your user's manual. If your cursor disappears while using Memory Scope, it's probably hiding behind the display. Cursoring down will bring it back into view.

Memory Scope is a simple but powerful tool for understanding your computer's operation.

```

1 REM MEMORY SCOPE - LOUIS F. SANDER
2 REM C-64 VERSION
3 DATA 120,169,145,141,020,003,169,003
4 DATA 141,021,003,088,096,173,136,002
5 DATA 141,158,003,162,000,189,000,000
6 DATA 157,000,004,202,208,247,162,000
7 DATA 173,134,002,157,000,216,202,208
8 DATA 250,076,049,234,4764
10 FORJ=1TO44:READK:CS=CS+K:NEXT:READCK
20 RESTORE:IFCS<>CKTHENPRINT"BAD!":STOP
30 FORJ=900TO943:READK:POKEJ,K:NEXT
40 V$="{SHIFT CLR}{6 CRSR DNs}":W$="{CRSR DN
  }":X$="RESTORE"
50 PRINTV$TAB(18)"POKE923,N - SYS900"W$
60 PRINT"POKE923,N TO SEE MEMORY PAGE N
70 PRINT"{CRSR DN}TO KILL THE DISPLAY, PRES
  S
80 PRINTX$" WHILE PRESSING {CTRL 9}STOP{CTR
  L 0}
90 PRINT
100 PRINT"TO REACTIVATE, DO A SYS900
110 SYS900:PRINT:PRINT
  
```

```

2 REM PLUS/4 & C-16 CHANGES
4 DATA 141,021,003,088,096,173,062,005
7 DATA 173,059,005,157,000,008,202,208
8 DATA 250,076,014,206,4350
  
```

Continued on p. 140.

PERFECT
EXECUTIVE GIFT.

"What about my attitude?"



You knew he'd say that. And you know how to respond with the Management Edge.™ It's one of the most sophisticated expert system packages for Commodore.® Only from Info Designs. Call 800-445-INFO. Get the Edge. \$79.95*

InfoDesigns®

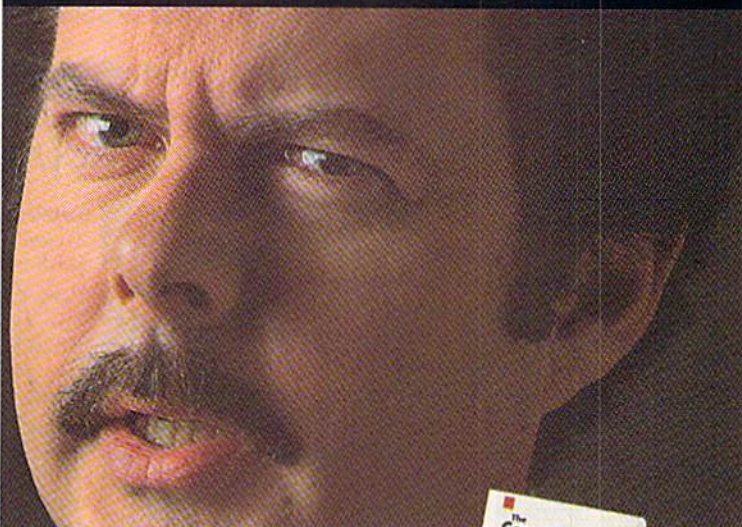


Registered Trademark: Commodore—Commodore Electronics Limited. Trademarks: The Management Edge—Human Edge Software Corporation—developed exclusively for Info Designs on the Commodore 64/128. *U.S. Currency.



THIS
YEAR'S
GREAT GIFT.

"Okay...so tell me again."



You have. He's not listening or you're not getting through. Try the Communication Edge.™ It's a sophisticated expert system package for the Commodore.® Only from Info Designs. Call 800-445-INFO. Get the EDGE. \$79.95*

InfoDesigns®



Registered Trademark: Commodore—Commodore Electronics Limited. Trademarks: The Communication Edge—Human Edge Software Corporation—developed exclusively for Info Designs on the Commodore 64/128. *U.S. Currency.



From p. 11.

```
40 V$="{SHFT CLR}{6 CRSR DNs}":W$=CHR$(141
+CHR$(27)+"T"+CHR$(19):X$="RESET"
90 PRINT"THEN TYPE X <RETURN>":PRINT
```

```
2 REM VIC-20 CHANGES
40 POKE937,PEEK(244)-1:POKE942,191
50 PRINT"{SHFT CLR}{12 CRSR DNs}"
60 PRINT"POKE923,N SHOWS PAGE N"
70 PRINT"STOP/RESTORE KILLS"
80 PRINT"{CRSR DN}SYS900 REACTIVATES"
90 SYS900:END
```

Louis F. Sander
Pittsburgh, PA

\$26C New life for the VIC—Here's a good way to use some of your VIC cartridges on your C-64, in a manner of speaking. The VIC-20 Programmer's Aid cartridge has some excellent utilities on it, the Renumbr utility being one of the most useful. After writing a Basic program on the C-64, save it to disk or tape as you usually do. Now load the program into the VIC. (You may need extra memory if the program is a long one.) Next, activate the Programmer's Aid cartridge. You can use all its features, as long as you don't run the C-64 program on the VIC. When your editing is finished, resave the program and move it back to your C-64.

Try this trick with VICMON, too.

Murray Stockill
Seattle, WA

\$26D Plus/4 word processor tip—I use a non-Commodore printer with my Plus/4, and I often want to use one of its special typefaces with the Plus/4's built-in word processor. Unfortunately, the word processor has only limited built-in means of accessing printer special features, and my printer requires a complicated command string.

I solve the problem by executing the following simple program before entering the word processor.

```
10 OPEN 4,4 : CMD4
20 PRINT (Printer's code for accessing special typeface)
30 PRINT#4 : CLOSE4
```

The printer does not reset when the computer enters the word processor, so when I print out my document, it comes out in the typeface I selected above.

Chris Edgeworth
Jasper, TX

\$26E Making connections—There are many sockets on the rear panel of any Commodore computer, and if you move your machine very often, you must continually match the cables with the proper sockets, while everything is out of sight behind the machine. The video and serial bus DIN connectors are very similar in appearance, which makes it difficult to distinguish between them.

140 / RUN NOVEMBER 1985

I've used tape and a felt-tip marker to put connector identification labels on the top surface of my machine, just above the back panel. Now I can see where the cables belong, by just looking at the labels. With that information at hand, I can connect my cables by feel, without looking at the back panel, and with no fear of making a shocking mistake.

Kay Belle Joyner
Fitz, IN

\$26F Disaster prevention—If you're charged with static electricity and touch one of the joystick ports, you can destroy an important chip inside. Since your video screen is powerfully charged with static, there's a disaster just waiting to happen.

If you put a piece of black electrical tape over the joystick ports, you will insulate them against all but the strongest static charges. The tape is undetectable, won't gum up the ports and can easily be removed when you need to plug in a joystick. It's an excellent safeguard for your computer and your wallet, and I had to learn it the hard way.

Kenny Sumrall
Sumrall, MS

\$270 Screen layout aid—When I design a hires screen, I take an overhead projector transparency pen and draw on my video monitor a picture of how I want the screen to look. Then I take my graphics program and plot dots underneath my pen lines. If I make a mistake or want to change something, I simply take a wet tissue and wipe off the lines on the screen. If you adopt this method of layout, be sure you use transparency pens, not permanent markers. A popular transparency pen is made by Vis-a-Vis and can be found in most bookstores.

Scott Eldridge
Lima, OH

\$271 Diskette handling tip—Everyone knows it's a bad idea to touch the surface of a floppy disk or to allow it to become contaminated in any way. But not everyone realizes that the *bottom* of the disk is the side that's actually written on.

So, if you spill coffee on a disk, you might not have any problems. But if you lay it on a wet or dirty desktop, you may be asking for trouble.

L.F.S.

\$272 Disk holder—Office supply stores sell an inexpensive item that is perfect for temporary working storage of computer disks and cartridges. Designed for sorting envelopes or holding telephone messages, it has a plastic base with eight vertical separators, dividing it into seven open-ended compartments. The one I use is

a Mighty Sorter, made by W.T. Rogers Company, and it fits very nicely on top of my disk drive.

Using this sorter, I can keep about ten disks and cartridges organized on top of my desk, with no immediate need to return them to their envelopes or storage boxes. It really comes in handy when I'm copying disks or otherwise swapping them in and out of the drive.

Margot Poloka
Sewickley, PA

\$273 Space saver—Unless you have a custom computer desk, it's always a problem finding room for your printer paper. I keep my paper in a cardboard tray made from the top of the carton it came in, but there's not much room for it between my printer and the wall. Also, no matter where I put my paper, it tends to tear on the cables at the rear of the printer.

My solution is to prop the tray against the wall at a 45-75 degree angle. This lets me move the printer closer to the wall and out of my way on the desk. I put a large empty can or cardboard tube between the printer and the tray, and the paper never touches the cables.

Barry L. Cohen
New York, NY

\$274 More on call-waiting—Call-waiting is a telephone feature that can cut you off if another call comes in while you are on-line with your modem. There's usually some way of temporarily disabling the feature, such as by using call-forwarding to automatically intercept incoming calls. But call-waiting is implemented differently by different telephone companies, and no one method will work in all parts of the country.

Here in southern Wisconsin, you dial *70, wait for the dial tone, then dial your own number. Anyone trying to call you then gets a busy signal until you complete your call. As soon as you hang up, the *70 is disabled, and you have the normal call-waiting feature available again.

If you need information on this subject, the best thing to do is call your local telephone company. If you ask to speak to a switching foreman or a repair foreman, the chances are you'll find somebody who can help you. But, if at first you don't succeed, try, try again.

Walt Grosch, KZ9F
Milwaukee, WI

\$275 School days—Have you tried to teach your parents how to use the computer, only to have them walk away furious? Well, here are some of the do's and don'ts of teaching them.

Don't tell them they're dumb or slow or how fast you learned to use the computer.

Don't expect them to remember long commands. Give them one command at a time.

Don't hog the controls, trying to show off. They know you can use the computer or they wouldn't be there.

Do show them applications they're interested in, like word processing.

Do keep them going if they seem interested in a specific program or concept.

Do be patient with them. You weren't a computer whiz in ten minutes, either.

Use your knowledge wisely.

Nick Luggiero
Kingwood, TX

\$276 Easy Script tip—Since this program uses the left-arrow key for cursor control, it's not readily apparent what to do if you want to put a left-arrow character in your text. Control 7 will do the job.

Michael A. Packer
Washington, WV

\$277 Fast Load re-enable—Documentation for the popular Epyx Fast Load cartridge says that once it is disabled, the only way to re-enable the cartridge is to reset the computer. I've found a second way to re-enable it. Just enter SYS 57194.

Bryan K. Davidson
Clovis, NM

Circle 302 on Reader Service card


TELEMESSAGE


C-64 BULLETIN BOARD SYSTEM

THE PROFESSIONAL APPROACH TO ELECTRONIC MAIL

FULL FEATURED:

* Software clock and calendar * Stores up to 100 private messages * Private file for msgs to the SYSOP * Automatic Mail—search at logon * Solid CRASH PROOF design * Automatic error recovery * Easily customized * UP LOAD/DOWN LOAD * Eight Information Areas	* On-line membership application * Operates in standard ASCII * Capacity for 100 members * Private and public messages * Logs a record of each call * Includes the popular chat mode * Menu driven and very User Friendly * Includes five support programs * Detailed operations manual
---	---

SECURITY:

Our system has security features that rival the large information services. No need for concern about callers abusing or crashing TELEMESSAGE!

BUSINESS APPLICATIONS:

Many of our customers use TELEMESSAGE to advertise and process orders. With our system your customers can shop 24 hours a day!

HARDWARE REQUIREMENTS:

1-Compatible with most auto answer modems including the Commodore 1650, Westridge and Hayes.

2-Works with either the MSD SD-2 or two Commodore 1541 disk drives. (Specify your disk drive model when ordering)

You get all of these features plus six programs, for only **\$79.50**. Make payment by check or money order. (add \$3.00 for C.O.D. orders)

TAILORED SOLUTIONS

P.O. BOX 183, WASHINGTON, D.C. 20044

PHONE (703) 845-8576 BROCHURE AVAILABLE

Software
Shoppers'
Guide

The Home User's Guide to Commodore Computing

U.S.A. \$2.95
CANADA \$3.95

RUN

December 1985 A CWC/I Publication

A C-128 Holiday Treat:

- Disk Commands
Made Easy
- Get Acquainted
With CP/M
- Intro to Assembly
Language

RUN's Great
Communicator—
A Top-Quality
Modem Program

Home Run Derby—
A Big Hit
Among C-64 Users!

Commodore's
1670 Modem—
High Speed
At a Low Price



Plus: Viewtron Goes On-Line Nationally

MAGIC



Compiled by LOUIS F. SANDER

**MAGIC is tricks, MAGIC is fun.
MAGIC is doing what cannot be done.**

Every month, *Magic* brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). *RUN* will pay up to \$50 for each trick accepted. Send your tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a *Trick Writer's Guide*. Readers outside the United States may omit the stamp.

In this season, when Peace on Earth and Goodwill Toward Men are prominent in every heart, it's satisfying to know that that's what *Magic* promotes. By sharing ideas from around the world, we make that world a better place to be, at least in our computer rooms.

The other side of the season, of course, is giving and receiving! Lucky are the *Magic* readers' loved ones, since they're never short of Christmas gift ideas. In fact, I just heard a fellow singing "The 128 Days of Christmas." He may have had a new computer in mind, or maybe just the number of gifts he's asked for. Either way, it's certain he shares our holiday wish to you—Merry CHR\$(ISTMAS) and Happy New Gear!

\$278 Easy C-64 RUN—Are you tired of typing R-U-N over and over again while working with Basic? Enter POKE 816,32 and your weariness will vanish. After that
10 / *RUN* DECEMBER 1985

Poke, pressing the shifted run/stop key will automatically run your program! You can return to normal by POKE 816,165 or by hitting the stop/restore combination.

Craig Johnson
Juneau, AK

\$279 Spritestorm—Here is an upgraded version of last month's Commodore 128 one-liner. This one features multicolor sprites that change as they move about. Some of the changes are a sight to behold.

```
10 FOR L=1 TO 255 : FOR J=3584 TO 4095 : POKE J,L : NEXT :  
FOR K=1 TO 8 : SPRITE K,I,K,I,I,I : MOVSPR K,50*K#K :  
NEXT : NEXT
```

For another variation, add STEP2 after the 4095.

Mary Lee McCafferty
Butler, PA

\$27A Typing in programs—To lessen the wear and tear on my precious copies of *RUN*, I use a copy machine to reproduce any programs I intend to type into the computer. As I type, I can mark, cut, spindle or mutilate the copy to my heart's content, with no chance of mutilating my magazine.

If the program doesn't run properly, it is much easier to compare a listing with the copy than to work with the whole magazine.

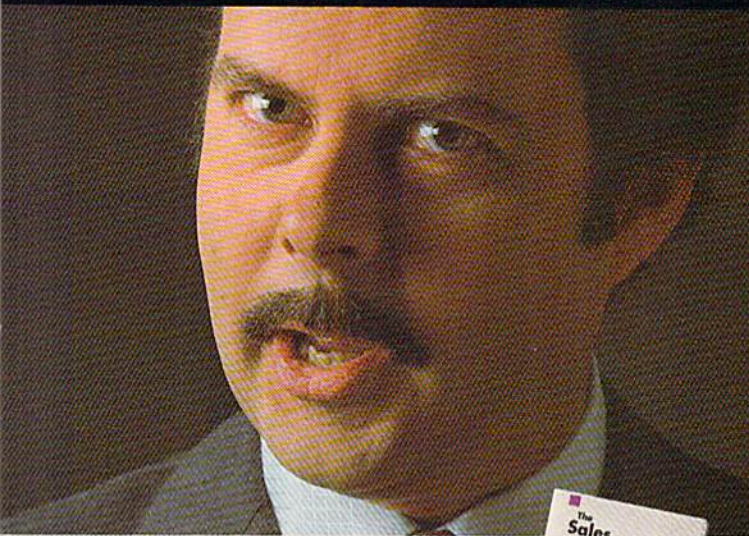
Geneva Hamilton
Fortuna, CA

\$27B Printing practice—I have a five-year-old son who is just learning to form his alphabet on special lined paper. You may remember it from your own school days, with its widely spaced lines for the tops and bottoms of the capitals and its dotted line in between for the tops of the lowercase letters.

Instead of buying this paper, I wrote a short program to have my printer form the lines, just like the practice sheets, and to print my son's name at the top of the page. The list-

AN IDEAL
BUSINESS GIFT.

"No, I don't think so..."



Using the Sales Edge,[™] you anticipated that, prepared a strategy, and got the sale. The Sales Edge is a sophisticated expert system package for Commodore.[®] Only from Info Designs. Call 800-445-INFO. Get the Edge. \$79.95*

Info Designs[®]

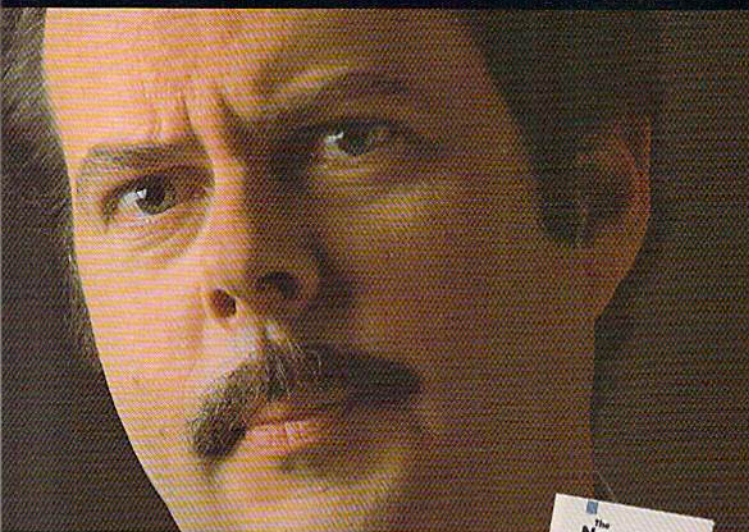


Registered Trademark: Commodore—Commodore Electronics Limited. Trademarks: The Sales Edge—Human Edge Software Corporation—developed exclusively for Info Designs on the Commodore 64/128. *U.S. Currency.



A
USEFUL
GIFT FOR EVERYONE.

"So, you want a raise?"



You'd know what to say next with the Negotiation Edge.[™] It's one of the most sophisticated expert system packages for Commodore.[®] Only from Info Designs. Call 800-445-INFO. Get the Edge. \$79.95*

Info Designs[®]



Registered Trademark: Commodore—Commodore Electronics Limited. Trademarks: The Negotiation Edge—Human Edge Software Corporation—developed exclusively for Info Designs on the Commodore 64/128. *U.S. Currency.



Magic

ing below shows a version for Commodore printers, where CHR\$(195) is the horizontal line corresponding to shifted C and CHR\$(45) is the minus sign or dash.

If you have a different printer, it shouldn't be hard to make it print similar characters with the line spacing appropriate to your needs.

```
100 REM PRINTING PRACTICE - D. BORKIN
110 T$="PRACTICE FOR MATTHEW"
120 FORJ=1TO79:SL$=SL$+CHR$(195):NEXT
130 FORK=1TO79:DL$=DL$+CHR$(45):NEXT
140 OPEN4,4
150 PRINT#4,SPC(40-LEN(T$)/2);T$
160 FORJ=1TO9
170 PRINT#4:PRINT#4,SL$
180 PRINT#4:PRINT#4,DL$
190 PRINT#4:PRINT#4,SL$
200 NEXT
210 CLOSE4
```

David Borkin, Jr.
Dearborn, MI

\$27C

Designs!—Here are two short programs that will give you a swatch of fabric, wallpaper, gift-wrapping paper or a rack of Christmas neckties. Run program #1, and you'll get an interesting repetitive pattern, chosen at random. Press any key except S, and you'll get a totally different one. Press S, and you'll get a table of numbers that are characteristic of that design. Run program #2 and enter those numbers, and you'll see the design repeated.

The possibilities in this are endless, and some of the designs are striking to behold. The odds are 2,519,040 to 1 against seeing the same one twice.

```
100 REM DESIGNS! #1 - ELIZABETH OMAN
110 REM PRESS 'S' TO SEE SPECS
120 REM PRESS OTHER KEY TO SEE DESIGNS
130 B=INT(RND(0)*16):S=INT(RND(0)*39)+2
140 CH=INT(RND(0)*256)
150 CC=INT(RND(0)*16):IF CC=B THEN130
160 POKE53280,B:POKE53281,B:PRINT"{SHIFT CLR
}"
170 FOR L=-1 TO 1000 STEP S
180 POKE1024+L,CH:POKE55296+L,CC
190 NEXT
200 GETA$:IF A$="" THEN 200
210 IF A$="S" THEN 230
220 GOTO 130
230 PRINT"{CTRL 1}";:IFB=0THENPRINT"{CTRL 2
}";
240 PRINT"BACKGROUND="B
250 PRINT"STEP="S:PRINT"CHARACTER="CH
260 PRINT"CHARACTER COLOR="CC:GOTO200
```

```
300 REM DESIGNS! #2 - ELIZABETH OMAN
310 INPUT"BACKGROUND (0-15)";B
320 INPUT"{6 SPACES}STEP (1-41)";S
330 INPUT"CHARACTER (0-255)";CH
340 INPUT"CHAR COLOR (0-15)";CC
```



```

350 POKE53280,B:POKE53281,B:PRINT"{SHFT CLR
}"
360 FOR L=-1 TO 1000 STEP 5
370 POKE1024+L,CH : POKE55296+L,CC
380 NEXT
390 GETAS:IFAS$=""THEN390
400 POKE53281,6:PRINT"{SHFT CLR}{CTRL 2}":E
ND

```

Elizabeth Oman
Lindsborg, KS

\$27D Season's sprittings—These sprites add festive finery to all your Christmas greenery. Though brilliant in their way, their strong points are form and symmetry. Plug them into last month's display programs or put them on the screen yourself.

```

81 REM CHRISTMAS SPRITE #1 - L. SANDER
82 DATA 000,126,000,003,255,192,015,255
83 DATA 240,031,255,248,063,255,252,063
84 DATA 255,252,127,255,254,127,255,254
85 DATA 127,255,254,127,255,254,127,255
86 DATA 254,063,255,252,063,255,252,031
87 DATA 255,248,015,255,240,003,255,192
88 DATA 000,126,000,000,000,000,000,000
89 DATA 000,000,000,000,000,000,000,013

```

```

91 REM CHRISTMAS SPRITE #2 - L. SANDER
92 DATA 000,000,000,000,000,000,000,000
93 DATA 000,000,024,000,000,000,024,000
94 DATA 060,000,000,060,000,000,126,000
95 DATA 063,255,252,015,255,240,003,255
96 DATA 192,000,255,000,001,255,128,001
97 DATA 231,128,003,195,192,003,000,192
98 DATA 006,000,096,000,000,000,000,000
99 DATA 000,000,000,000,000,000,000,099

```

L.F.S.

\$27E Sprite troubles—When checking for sprite collisions on some C-64s, you find a colliding sprite that suddenly disappears. These are called sparkles, and the best way to avoid them is to check each location twice. If you detect a collision on the first check but not on the second, your collision was really a sparkle.

Steven Davis
Address Unknown

\$27F DEF FN wizardry—Commodore Basic only allows one argument in user-defined functions, but this limit should not be taken seriously. I use functions with no arguments or with multiple arguments.

For example, when using the Read statement, it's useful to know from which line the data is being read. On the C-64, the line can be found by entering:

Continued on p. 166.

PERFECT
EXECUTIVE GIFT.

"What about my attitude?"



You knew he'd say that. And you know how to respond with the Management Edge.™ It's one of the most sophisticated expert system packages for Commodore.® Only from Info Designs. Call 800-445-INFO. Get the Edge. \$79.95*

Info Designs



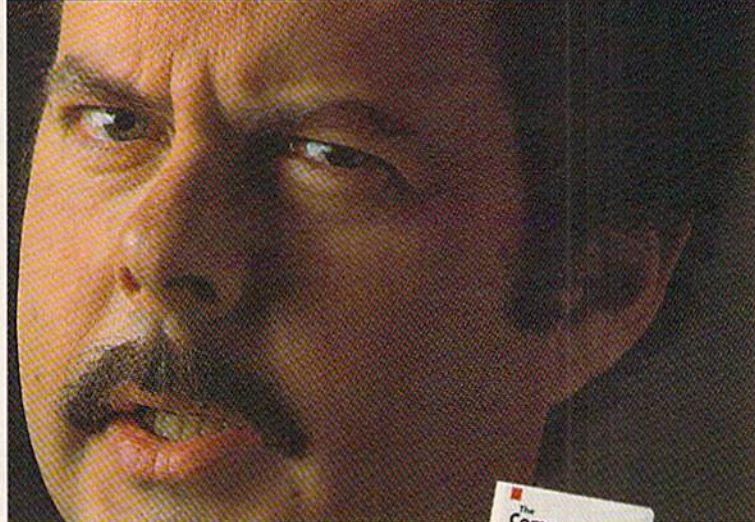
Registered Trademark: Commodore—Commodore Electronics Limited. Trademarks: The Management Edge—Human Edge Software Corporation—developed exclusively for Info Designs on the Commodore 64/128. *U.S. Currency.

Circle 59 on Reader Service card.



THIS
YEAR'S
GREAT GIFT.

"Okay...so tell me again."



You have. He's not listening or you're not getting through. Try the Communication Edge.™ It's a sophisticated expert system package for the Commodore.® Only from Info Designs. Call 800-445-INFO. Get the EDGE. \$79.95*

Info Designs



Registered Trademark: Commodore—Commodore Electronics Limited. Trademarks: The Communication Edge—Human Edge Software Corporation—developed exclusively for Info Designs on the Commodore 64/128. *U.S. Currency.



From p. 13.

```
PEEK(63) + 256 * PEEK(64)
```

If I'm using that specific Peek a lot, I add the following line early in my program.

```
100 DEF FNP(X) = PEEK(63) + 256 * PEEK(64)
```

Then, whenever I want this information, I just type

```
PRINT FNP(X)
```

where X is a dummy argument.

If I want to read bit B from memory location M, I use DEF FN with multiple arguments as follows.

```
200 DEF FNR(B) = (PEEK(M) AND 21B) / (21B)
```

To use it to read bit 3 of memory location 32768, enter:

```
290 M = 32768 : PRINT FNR(3)
```

Other examples are numerous. Just remember the key: Any complex, often-used arithmetic expression can be abbreviated in this fashion.

Dan Reisberg
Brooklyn, NY

\$280 Random numbers—The general formula for producing a random number between A and B is:

$$N = \text{RND}(0) * (B - A) + A$$

If you wanted to choose Ns between 30 and 40, for example, you would use:

$$N = \text{RND}(0) * (40 - 30) + 30$$

You could combine the numbers inside the parentheses, of course, and if you wanted only integers as N, you could use the INT function to get it or use N% rather than N. To correct for the downward rounding in these cases, change the quantity inside parentheses to (1 + B - A).

Mary D. Brigito
Old Forge, NY

\$281 12-day calculator—This totals the number of gifts in the famous Christmas song. By following its logic, you can learn about nested loops.

```
100 REM 12 DAYS OF CHRISTMAS - KRINGLE
110 FOR DAY = 1 TO 12
120 FOR PRESENT = DAY TO 1 STEP - 1
130 PRINT PRESENT;
140 NUMBER = NUMBER + PRESENT
150 NEXT PRESENT
160 PRINT
170 NEXT DAY
180 PRINT "TOTAL PRESENTS =" NUMBER
```

Kris Kringle
Santa Claus, IN

\$282 Detecting peripherals—When a program is running, you can determine whether a specific

device is on-line by executing the following, where DN is the device number in question.

```
40 OPEN15,DN,15:CLOSE15
50 DI$="OK":IFST<>0THENDI$="OFF LINE"
60 PRINTDN;DI$
```

The key is to access the peripheral through channel 15, and then read the status variable ST. If it has a non-zero value, the peripheral is off-line.

Fred Roberts
Charlotte, NC

\$283 Text centering tip—When using a word processor, it's sometimes desirable to center a block of text as a unit, rather than line by line. For instance, if you wanted to center:

From: J. Lee
Riverside, CA
To: Alexander Papatheophilus
Greece

you'd want to do it as shown, with "From" directly above "To" and the first letters of the names and addresses lined up.

But with most word processors, each line would be individually centered, and the results would be chaotic. A solution is at hand if your word processor recognizes what is called a hard space. (In PaperClip and others, you get a hard space by typing a shifted space.)

If you turn on centering, but use hard spaces for the leading and trailing spaces, the whole block will be centered as a unit. In the above example, when typing the last line, you'd use hard spaces from under the T in To to the G in Greece and from the last letter in Greece until you were under the last letter of Al's last name.

Jerry W. Lee
Riverside, CA

\$284 Tape counter trickery—If your tape counter gets out of sync with your tape, you can easily locate your desired program by first loading or verifying any program on the tape. That puts your tape at the start of the next program, whose normal starting number is the key to the trick. Let's call that number the current program's normal starting number, or CNSN. If your counter showed that number right now, you wouldn't have a problem. To get to the desired program, move your tape to the counter number determined by this formula, where DNSN is the desired program's normal starting number:

$$\text{Counter Reading} = \text{Present Reading} + (\text{DNSN} - \text{CNSN})$$

If the number happens to be negative, add 1000 to it. If it's over 1000, subtract 1000.

Norman K. Creter
Cleveland, OH

\$285 Disk doctor—Do you have a disk that absolutely will not format properly? Try erasing it with a bulk eraser of the kind used to erase magnetic tapes. I have used this trick to reclaim several disks of the bargain variety.

During this process, be sure to keep the disk in its protective envelope to lessen the possibility of contaminating it. Don't worry—the magnetic field will go right through the protective envelope.

Scott Bouslog
Muncie, IN

\$286 Selective directories—If you want to get a directory of all files of a certain type, you can use one of the following commands.

LOAD"\$* = P",8 loads PRG files only
LOAD"\$* = S",8 loads SEQ files only
LOAD"\$* = R",8 loads REL files only
LOAD"\$* = U",8 loads USR files only

David Lim
Pasadena, CA

\$287 Naming programs—I use a standard method for naming programs that involve a loader program. (These tend to be machine language programs that have a Basic loader or Basic programs where one part is loaded by another.)

If I have a two-part chess game, I name the first part "CHESS" and the second part "CHESS". Note the space before the C in the second program.

This way, it's easy to see which programs go together when viewing the disk menu or copying programs. As an added benefit, the second program name doesn't list on the C-64.MENU program that is included on many Commodore disks.

Dave Brown
Wandering River, Alberta
Canada

\$288 Disk Carrier—The Rubbermaid No. 3871 five-cup Square Servin' Saver, available in most discount stores, makes an excellent storage box for disks. It is water- and dust-tight and will hold up to 25 disks. I bought mine for 99 cents.

Marty Amorin
Iowa City, IA

\$289 Disk mailer—Having trouble with disks getting bent in the mail? Get a six-inch square of Styrofoam insulation about one inch thick, put your disk on top of it and wrap it in brown paper. The package is bend-resistant beyond belief, and the styrofoam is so light that it doesn't add to the cost of the postage.

Brian Gasperich
Houghton, MI

\$28A Printing on envelopes—I use my printer for addressing envelopes, but sometimes the envelope slides around as it moves out of the range of the friction-feed device. I solve the problem by inserting a full-size sheet of paper under the envelope's flap, then feeding the envelope-paper combination into the printer.

Also, if your printer has a thickness lever, it's a good idea to set it to "thick" while printing on envelopes.

Alfred Lusher III
Cold Spring, KY

\$28B Paper alarm—It's a good idea to ink a big cross on the third-to-last sheet of paper in the tray. This gives you a timely warning of imminent paper exhaustion.

Ian Haynes
Westville, South Africa

\$28C Thermal paper—If you're not happy with the way your thermal transfer printer works with standard computer paper, be aware that Hammermill makes fanfold paper (item #19900-0) specifically for thermal transfer technology. The paper contains micro perforations and is very smooth on one side. The results are excellent, and the price is comparable to standard computer paper.

Doug Mlodzinski
Canandaigua, NY

\$28D Ghostbusters buster—If you like the Ghostbusters game for the C-64, but don't think \$10,000 is enough to get started with, I've got some good news.

When you're asked for your name at the beginning of the game, type OWEN. When the computer asks if you have an account, answer Yes. When asked for your account number, simply type LIST. The vehicle selection screen will appear, and you'll start the game with \$720,000.

Russel Swift
Address Unknown

\$28E Reset curiosity—When powering up or resetting, hitting the restore key will bring the system to a halt. The computer won't be able to continue, as evidenced by the shrunken border that persists until you reset the system again.

Craig Johnson
Juneau, AK

\$28F Travel tips—When you travel with your computer, always take along a good extension cord and a three-prong adapter for the ac wall socket. It's not a bad idea to take a multi-socket power strip, either, just in case you run out of outlets.

R.W.P. Patterson
Stone Mountain, GA

RUN

January 1986 A CWC/I Publication

THE VIDEO/ COMMODORE CONNECTION

A NEW TWIST
IN ENTERTAINMENT

CP/M Treasure Trove—
FREE PROGRAMS
FOR YOUR C-128

The Resource Center—
EDUCATION SERIES DEBUT



Plus:

—SUPER UTILITIES—AUTO-RUN AND LISTER
—RUNTERM PLUS, PART II



MAGIC



Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun. MAGIC is doing what cannot be done.

Every month, *Magic* brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). *RUN* will pay up to \$50 for each trick accepted. Send your tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a *Trick Writer's Guide*. Readers outside the United States may omit the stamp.

\$290 Christmas card—Type in this program on your C-64 or C-128 right now. If Christmas hasn't come yet, run it and enjoy it. If it's December 26th or later, put the program away with the ornaments, and take a look at it next year.

```
1Ø REM CHRISTMAS CARD - AUTUMN BAYLES
2Ø POKE53281,13:POKE5328Ø,1Ø:PRINT"{SHFT CL
R}{CRSR DN}"
3Ø X$="{CTRL 6}HO":Y$="{COMD 3}HO":FORT=1TO
9:PRINTTAB(T);X$;TAB(2Ø-T);Y$:NEXT:PRINT
TAB(T);X$
4Ø FORJ=11TO2Ø:PRINTTAB(2Ø-J);Y$;TAB(J);X$:
NEXTJ
5Ø PRINTTAB(18);"{11 CRSR UPs}{COMD 3}MERRY
CHRISTMAS{1Ø CRSR DNs}"
6Ø FORC=5TO1ØSTEP5:FORP=55754TO55768:POKEP,
C:NEXT:FORT=1TO1ØØ:NEXT:NEXT:GOTO6Ø
```

Autumn Bayles
Nazareth, PA

\$291 Zaxxon zap—If you type RED on Sega's Zaxxon when the score shows up, you will be able to fly through walls and will not be damaged by anything.

Moien Jawaidd Zobairi
Riyadh, Saudi Arabia

\$292 1541 Unscratch—This miraculous utility resurrects programs and datafiles that have been inadvertently scratched from the disk! As it runs, it examines the disk in the drive, displaying the name of every file in the directory, including the recently scratched ones. When it finds one of the latter, it asks if you want to unscratch it. If you do, it requests a code number for the type of file involved (SEQ, PRG, REL or USR), then performs the resurrection.

We're dealing in *very* strong magic here, and if things don't go just right, you can easily corrupt your disk. Unscratching is possible, since scratching a file merely

This month, as usual, magician readers from around the world have favored us with an incredible variety of computorial delights, applicable to every Commodore machine. Since *Magic's* inception two years ago, we've printed 1024 tricks from every state in the U.S. and Australia, from every province in Canada, and from 37 other countries. There's no limit to our interest in your creations, no matter where you live. Send them in and see—fame and fortune may find you.

If you like the tricks on these pages, you'll love *RUN's* second Special Issue, available in stores right now. Along with a wealth of other material, it features 512 *Magic* tricks—all those we printed in 1985, plus more than 200 you've never seen before. Many of the reprinted items have been enhanced and improved, and all the tricks are organized and indexed for exceptionally easy reference.

Commodore-128 owners will appreciate our efforts in converting some of the older tricks to work on their machines. Also, the flow of new C-128 tricks is starting to look like a river; in months to come you'll see some spectacular sorcery, 2⁷ style. But for now, no matter which machine you own, behold the wonder of *Magic*...

sets a flag in the directory; the file and directory entry themselves are otherwise unchanged. Further writing to the disk, however, can overwrite any of this material, leading to unpredictable results when unscratching resets the flag. In addition, Unscratch bypasses several built-in safeguards of your disk recording system; without them, it's easy for troubles to arise.

So, please be careful when working with this program. After you type it in, test it to be certain you haven't made any disastrous errors. Save several programs on a newly formatted disk, then scratch and resurrect them one by one, until you're convinced that Unscratch is working perfectly. By the way, it's normal to experience apparently random delays of 30 seconds or so while running Unscratch—the program needs that time for “thinking.”

When actually using Unscratch, it's best to use it just after your program has been scratched, before any new material has been saved to the disk. To do otherwise is to invite corruption (though sometimes it's a risk worth taking). And since the names of scratched files can duplicate those of live ones, you must be extremely careful in choosing the file to unscratch. The safest procedure is this:

- Make a backup copy of the disk you want to work with, then set it aside.
- Unscratch the file from the original disk, then load it and check to see that it's really the one you want.
- Save the file onto the disk you set aside.

If you type the program correctly and use it with caution, Unscratch can be your closest friend in times of real distress. Use it wisely and well, and remember where you got it.

```
100 PRINT "{SHIFT CLR}UNSCRATCH - LUKE MESTER

110 DIM BL$(255):TR=18:SE=1:OPEN2,8,15:OPEN1
    ,8,2,"#"
120 PRINT#2,"U1:2,"8,TR,SE:FORP=0TO255:GET#
    1,BL$(P):NEXT P
130 NT=ASC(BL$(0))+CHR$(0):NS=ASC(BL$(1))+CHR$(0):NM=1:FORFI=2TO255STEP32
140 FORPN=3TO18:IFBL$(FI+PN)=""THEN190
150 FORPN=3TO18:PRINTBL$(FI+PN):NEXT:PRINT
    :IFASC(BL$(FI)+CHR$(0))<>0THEN190
160 INPUT"UNSCRATCH{3 SPACES}N{3 CRSR LFs}"
    :Q$=IFLEFT$(Q$,1)="N"THEN190
170 NM=0:PRINT"FILE TYPES: 1=SEQ{2 SPACES}2
    =PRG{2 SPACES}3=USR{2 SPACES}4=REL"
180 INPUT"FILE TYPE{3 SPACES}2{3 CRSR LFs}"
    :TY=BL$(FI)=CHR$(TY+128):IFTY>40RTY<1TH
    EN180
190 NEXTFI:IFNM=1THEN210
200 FORP=0TO255:PRINT#2,"B-P:"2,P:PRINT#1,B
    L$(P):NEXTP:PRINT#2,"U2:2,"0,TR,SE
210 IFNT=0ANDNS=255THEN230
220 TR=NT:SE=NS:GOTO120
230 CLOSE1:PRINT#2,"V0":CLOSE2:END
```

Luke Mester
Colliers, WV

Doing this also resets VOL to an intermediate level, probably 7 or 8.

Louis F. Sander
Pittsburgh, PA

\$294 C-128 load and run—One simple command can be used to load a C-128 program from disk and to run it automatically:

RUN "programname"

This does everything you need.

Kenneth H. Hottes
Danbury, CT

\$295 C-128 joystick ports—The C-128 boasts a slick appearance, but its designers overlooked at least one small detail. The contour of the molding near the joystick ports prevents insertion of the PaperClip (C-64 version) dongle and other similar copy-protection plugs.

I solved the problem by buying a \$4.95 joystick accessory at a local discount store. The accessory is a Y cable that allows you to plug two joysticks into a single port on an Atari video game. When the Y cable is plugged into the C-128, the dongle can easily be inserted into either of its female connectors.

Others have made extensions from the subminiature D connectors available at Radio Shack, but that requires knowledge of soldering and other expertise.

Harold Gath
Brownsville, PA

\$296 Shifted run/stop—On most Commodore computers, when you press these keys in combination, you're prompted with "Press Play on Tape." (The computer is trying to load and run the next program on the cassette.) If you hit the keys by mistake (not an uncommon event), you can correct your error by pressing the stop key.

On the C-128, however, pressing shifted run/stop loads and runs the first program on your disk, without pausing for additional action. If you accidentally hit those keys, whatever is in memory will immediately be overwritten by the new program coming in from disk! If the overwritten program was a valuable one you had not yet saved, you'll be annoyed, to say the least.

You can guard against this disaster by placing a sequential file first on your disk. Since the computer cannot load it, it can't overwrite any programs. You can put such a file on a newly formatted disk by executing this line

```
OPEN 2,8,2,"INSURANCE,S,W":CLOSE2
```

Another, less automatic, way of having this insurance is to leave your disk's door open.

Bruce Jaeger
St. Paul, MN

\$293 C-128 bell—You can ring the bell on your C-128 by executing

```
PRINT CHR$(7)
```

10 / RUN JANUARY 1986

\$297 C-128 MID\$ feature—In C-128 mode, MID\$ has a wonderful but undocumented feature: You can use it to replace characters in one string with those from another!

Continued on p. 110.

From p. 10.

The format is

MID\$(string1,position<,length>)=string2

What happens is the first length characters of string2 replace the length characters of string1, starting at the variable "position." The remainder of string1 is not affected.

The length is an option, but if you leave it out, string2 cannot be longer than the remaining number of characters in string1, or an illegal quantity error results.

Rick Rothstein
Trenton, NJ

\$298 CP/M utilities—If you are using CP/M mode on the C-128, you might think that it came without some of its important utilities, because they don't show up in any disk directory. Flip your disk to the other side, and you'll find them lurking there.

Eugene Cozzi
Barre, VT

\$299 C-64/VIC Buffer Saver—Many interesting programs Poke machine language routines into the cassette buffer and adjoining locations, which occupy memory from 820 to 1023, decimal. The trouble with this technique is that you must run the Basic POKER every time you want to load your machine language routines.

The routine below saves the machine language directly from the buffer to disk or tape. To use Buffer Saver, just add it to the end of your Basic POKER program and add the proper program name in line 160. If you have a VIC, you must also change the SYS64738 to SYS64802. As printed, the program saves to disk. To make it save to tape, change the .8 after the SAVE to a .1,1.

Once machine language programs have been saved to disk, they must be loaded using the format

LOAD"name",8,1

in order to work properly, and a New command must be executed following the load. If the New wipes out an important Basic program, you can either reload it or use an Unnew program to bring it back to life. If you use the DOS 5.1 wedge, you can load machine language by using % instead of /, and, in that case, you need not perform the New command.

```
100 PRINT "{SHIFT CLR}{CURSR DN} 64/VIC BUFFER
    SAVER - LOUIS F. SANDER{CURSR DN}"
110 PRINT"SAVES 820-1023 ($0334-$03FF) TAPE
    BUFFER"
120 PRINT"{CURSR DN}NOTICE - YOU MUST FIRST
    PUT YOUR"
130 PRINT"PROGRAM NAME INTO LINE 160."
140 INPUT"{CURSR DN}READY TO SAVE THE BUFFER
    ";A$:IFLEFT$(A$,1)<>"Y"THENEND
150 POKE43,52:POKE44,3:POKE45,0:POKE46,4:PO
    KE179,20:CLR
160 SAVE"PROGRAM NAME",8:SYS64738:REM CHANG
    E TO SYS64802 FOR VIC
```

Louis F. Sander
Pittsburgh, PA

\$29A Working with machine language—You can easily tell when a Basic program includes a machine language routine, because you'll see one or more Data statements whose elements are numbers between 0 and 255. Those numbers are the machine language program, and the Basic program always includes some POKES to put them into memory.

Once the machine language program is in memory, it is activated by a SYS command, which is the machine language equivalent of RUN. Sometimes the SYS causes a one-time action to take place, and sometimes it activates a feature that you can access again and again, until the computer is reset.

Even if you erase your Basic program with the New command, or even if you reset it with stop/restore or a reset button, the machine language program remains in memory! If your reset seems to have killed the machine language, you can usually resurrect it by repeating the original SYS.

Ilse Payne
Cheswick, PA

\$29B Delete a block of lines—If you have a C-64 or VIC, it's never pleasant when a large block of Basic lines needs to be removed from your program. To delete them, you must type each line number individually, then press the return key. Sometimes, you can write a Basic program to automate the task, but such programs usually depend on your lines being numbered in a very regular way.

If you have a C-128, Plus/4 or C-16, or if you own a programmer's aid cartridge, the Delete command is a godsend at times like these—it lets you remove any number of lines, just by typing one command.

The accompanying program provides the Delete command for the rest of us. When run, it puts a machine language program into the cassette buffer. Once that program is in place, blocks of lines can be deleted by typing commands of the following form:

SYS828,starting line#,ending line# + 1 <return>

For example,

SYS828,100,200 deletes lines 100-199

SYS828,0,100 deletes everything up to line 99

SYS828,300,63999 deletes everything from line 300-63998

SYS828,300,0 deletes everything from 300 up

Once the machine language is in place, you can use this month's Buffer Saver program to save it directly, so you won't have to bother with the Basic program again. Machine language experts will be pleased to know that the machine language is completely relocatable, making it possible to store in any safe area of memory.

```
10 PRINT"BLOCK DELETE - J. PELLECHI"
20 CS=0:FORJ=1TO147:READK:CS=CS+K:NEXT
30 RESTORE:IFCS<>17763THENPRINT"DATA ERROR"
   :STOP
```


Listing continued.

```

40 S=828:FORJ=STOS+146:READK:POKEJ,K:NEXT:I
   FPEEK(65532)=226THENEND:REM C-64
50 POKES+6,206:POKES+26,198:POKES+37,198:PO
   KES+56,198:REM VIC-20
60 POKES+140,197:POKES+143,19:POKES+146,196
   :REM VIC-20
61 DATA 162,004,138,072,032,253,174,032
62 DATA 107,169,104,170,165,021,149,105
63 DATA 165,020,202,149,105,202,208,234
64 DATA 032,089,166,165,108,166,109,133
65 DATA 020,134,021,032,019,166,165,095
66 DATA 166,096,133,108,134,109,165,106
67 DATA 166,107,133,020,134,021,032,019
68 DATA 166,165,095,166,096,133,106,134
69 DATA 107,165,108,197,106,165,109,229
70 DATA 107,144,012,165,045,233,002,133
71 DATA 106,165,046,233,000,133,107,056
72 DATA 165,045,229,106,133,104,165,046
73 DATA 229,107,133,105,024,165,104,101
74 DATA 108,133,045,165,105,101,109,133
75 DATA 046,160,000,165,104,208,004,198
76 DATA 105,048,015,198,104,177,106,145
77 DATA 108,200,208,239,230,107,230,109
78 DATA 208,233,032,051,165,032,089,166
79 DATA 076,128,164
  
```

James Pellechi
Middle Island, NY

\$29C Restore key tip—If you've experienced erratic operation when using the stop/restore combination, you've got plenty of company. Don't call the repairman, though, because there's nothing wrong with your computer. To work properly, the circuitry that monitors the restore key must see a sharp and rapid change in that key's status. So, if restore is pressed gently—in the manner of the other keys—the monitoring circuit often misses the event. The solution is to always use the following keyboard technique:

Press the stop key and hold it, just as though you were using it to shift a letter key. While stop is firmly depressed, give the restore key one sharp tap, as though your finger were a woodpecker's beak.

Mary Haver
Wood Islands, PEI
Canada

\$29D Easy-fingered loading—It's common practice to rename frequently used programs with one-character names, to minimize the amount of typing necessary to load them. It's even better when the new name is a single shifted character, such as shifted W. With such names, you can press the shift key immediately after the L in the abbreviated Load command, and not release it until the comma before the 8 for the disk drive number. This eliminates the coordinated fingering required with other sorts of filenames. It's not much, but it sure feels better!

David A. Hooyer
Bangkok, Thailand

\$29E Detecting keypresses—There is an alternative to the Get statement in detecting single keypresses on Commodore computers. A memory location called LSTX always contains a number that corresponds to whatever key is currently pressed. Here are the locations of LSTX:

C-64 and VIC—197
Plus/4 and C-16—2038
C-128—213

You can determine the values for different keys by executing the following program and pressing the keys. Substitute one of the numbers above for LSTX in the following example.

```
10 PRINT PEEK (LSTX) : GOTO 10
```

Feng Yihao
Singapore

\$29F Exclusive OR operator—The exclusive OR, also called XOR or EOR, works by comparing the bit patterns of two numbers and then returning a 1 for every case where the bits are dissimilar. In other words, if the compared bits are both 0s or both 1s, a zero will be returned.

ULTRABYTE

ULTRABYTE DISK NIBBLER VERSION 2.0

TOP - RATED COPIER DRAMATICALLY IMPROVED

INFO - 64 Magazine, June 1985, compared Commodore 64 copy programs and awarded the Nibbler its highest rating. Now the Nibbler has been improved to copy dozens of the latest programs that previously could not be copied, all in less than three minutes.

FOR SINGLE 1541 & DUAL MSD DRIVE

- Simple. Even a beginner makes perfect copies
- Fast. Copies protected disks in three minutes
- Sophisticated. Senses the disk being copied and automatically adjusts for dozens of protection schemes. Copies 99% of software
- Modular design to allow easy updates
- Even copies itself. For this reason, no refunds will be given

\$ 39.95 plus \$4.00 shipping & handling.

Mastercard, Visa, Check or M.O., Calif. add 6.5% (\$2.60) sales tax.
Foreign orders or COD add \$2.00. Payment must be in U.S. funds.
Previous customers may order V 2.0 for \$20.00 plus \$4.00 shipping

NIBBLER V 2.0 EVEN COPIES ITSELF

To order, write or call 24 hr. order line
For information, write. Phone for orders only

ULTRABYTE (818) 796-0576

P.O. Box 789 La Canada, CA 91011 USA

DEALERS & DISTRIBUTORS WANTED

But if one is 1 and the other is 0, the XOR will return a 1. The principle is illustrated by this diagram:

	1001
XOR	1100
	0101

Machine language includes an XOR operator, and it is frequently used for flipping bits. (Using XOR to combine one byte with a byte consisting of all 1s gives a new byte whose bits are the reverse of those in the original.)

Commodore Basic doesn't have an XOR operator, but you can easily simulate one by using this:

A XOR B = (A OR B) AND NOT (A AND B)

**Georges Elias
Tripoli, Lebanon**

\$2A0 Cardco modification—I have a Cardco/? + G interface. I use it mainly for printing text, but occasionally I use it with The Print Shop program. Changing between the two applications normally requires opening the interface and flipping DIP switch #8.

I made the job much easier by turning the DIP switch off and wiring a Radio Shack #275-624 toggle switch in

parallel with its terminals. I mounted the switch in a hole in the interface's cover. Now, when I need to change applications, all I do is flip the Radio Shack switch.

**Jim Lynch
St. Thomas, Virgin Islands**

\$2A1 Screen scrolling—Here are some easy ways to scroll your screen up or down a line, without using any machine language routines. Upward scrolling can be done by:

PRINT " [HOME] [25 CRSR DNs] [HOME] "

Downward scrolling, on the C-64 only, can be accomplished by:

PRINT " [HOME] [CRSR DN] [CRSR LF] [SHFT INST] " : POKE 218,156

**Shachar Ebel
Rehovot, Israel**

\$2A2 Faster-running programs—Here are some hints to make your Basic programs run faster:

- In For...Next loops, type the Next without the variable name.
- If possible, do not use arrays.
- If you have numerous Data statements, put them at the beginning of your program.
- Do the same with frequently executed subroutines.
- Strip all the spaces and REMs from your program.

**Javier Echeverria
Santander, Spain**

\$2A3 Gemini 10X paper sensor—You can disable this sensor by executing the following command:

OPEN 4,4 : PRINT#4,CHR\$(27);"8" : CLOSE 4

**Moien Jawaidd Zobairi
Riyadh, Saudi Arabia**

\$2A4 SFD1001 disks—The Commodore SFD-1001 disk drive looks just like a 1541, but it holds one megabyte of information. The major difference between the SFD-1001 and the 1541 is that the SFD-1001 is a direct drive with a massive heat sink and an IEEE interface instead of a serial bus. The SFD-1001 is made, but not sold, by Commodore; it is only available at a few places. Working with this drive can be a pleasure, but it has more than its share of challenges, mostly due to poor documentation.

Commodore recommends a 96TPI disk for use in this drive, but such disks are extremely hard to find and require a very strong signal to format and write to; the SFD-1001's signal is not strong enough. I've had success with premium-quality DSDD disks, such as Dysan and Maxell.

**John Saguto
Washington, DC**

Circle 74 on Reader Service card.

P R O F E S S I O N A L

H A N D I C A P P I N G S Y S T E M S

• PRESENTED BY PROFESSOR JONES •

GLD. Thoroughbred "Gold" Edition™
A "Full" featured thoroughbred analysis designed for the professional and the serious novice. **\$159.95 complete**

EGLD. Enhanced "Gold" Edition™
Gold Edition with complete Master Bettor™ system integrated onto the same disk. This powerful program will transfer all horses and scores to the bet analysis with a "single keystroke" (Master Bettor™ included) **\$199.95 complete**

GLTD. Limited "Gold"™
Enables Professional Handicappers to assign specific values to the racing variables "they" feel are important. Create program weight based on a particular track and time tune it for maximum win percentage. This program is designed for "ease of use". The user needs **no programming experience**. (contains Integrated Bettor™) **\$299.95 complete**

GD. Gold Dog Analysis™
The "ONLY" professional greyhound analysis available that evaluates ALL variables **\$149.95** w/integrated Bettor **\$199.95** Limited Version **\$299.95**

MHH. Master Harness Handicapper™
Professional software designed to provide a thorough analysis of all trotter and pacer races in North America and Canada **\$159.95 complete** **\$199.95** w/integrated Bettor **\$299.95**

Professor Pix Football™
Complete STATISTICAL ANALYSIS on Data Base allowing "Designated" previous games to be evaluated Statistical Series **\$99.95** w/Win-Loss Power Ratings **\$149.95**

NBA. Basketball™ NBA **\$99.95** w/college **\$129.95** w/power ratings **\$149.95**

LOT. Lottery Analysis™
Statistical comparison program designed to detect subtle patterns in winning numbers and digits. Lottery (3-4 digit) **\$79.95** w/Lotto (Max. 99 Digit) **\$99.95**

PC-3 Portable Computer (4k) with choice of Thoroughbred, Greyhound or Trotter™ **\$249.95** (includes portable computer and program)

M-100 Portable (24k) w/choice of Thoroughbred, Greyhound, or Trotter™ **\$649.95** (includes portable computer and program)

IBM™
APPLE™
TRS-80™
CPM™
COMMODORE™

Prof. Jones
1940 W. State St.
Boise, ID 83702

48 HR. FREE SHIPPING

CALL
208-342-6939

TERMS: FREE SHIPPING ALL SOFTWARE. Add \$6.00 hard-ware. \$6.00 C.O.D. UPS Blue \$6.00. Out of Country \$9.00. ID Residents 4% + 3 weeks personal checks. Cash price only add 2% Visa/MC. Prices subject to change.

BROCHURE AVAILABLE

114 / RUN JANUARY 1986

RUN

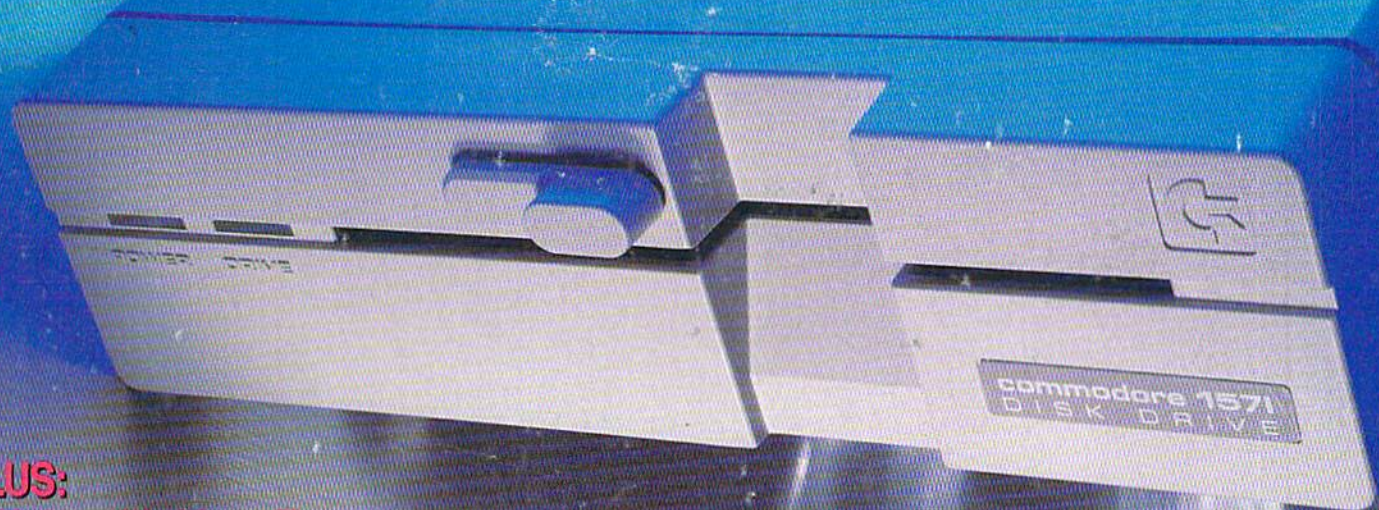
February 1986 A CWC/I Publication

TEST-DRIVE THE 1571

- Easy to Use
- Reliable
- Quiet
- Fast

AMAZING BREAKTHROUGH FOR C-128:
Ultra HiRes Graphics In 80 Columns!

Create Your Own
Character Sets
On the C-128



PLUS:

- Help with Your Taxes
- An Easy & Safe Way To Rename Disks





Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun. MAGIC is doing what cannot be done.

Every month, *Magic* brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). *RUN* will pay up to \$50 for each trick accepted. Send your tricks to:

MAGIC
c/o Louis F. Sander
PO Box 101011
Pittsburgh, PA 15237

If you enclose a self-addressed stamped envelope, we'll send you a *Trick Writer's Guide*. Readers outside the United States may omit the stamp.

This season always brings a wave of new readers to *Magic* and to *RUN*. If you are one of them, we welcome you and invite you to become a regular. You're sure to find, as thousands have found, that *Magic* is a vital source of instruction, ideas and inspiration. In bringing these treasures to light, we never forget the newcomers, who need such guidance.

Nor do we forget the seasoned veterans, since they give us our best items and always appreciate a better way of doing things. They tell us, in fact, that many advances in computing are first presented in *Magic*. What all this means, of course, is that in the world of Commodore computing, the best ideas show up in *Magic*. And what that means, of course, is that if you have or need a great idea, the place to come is *Magic*.

\$2A5 Funny Valentine—Can a computer program make you cry? Depending on your mood, it might. This one, for the C-64 or the C-128 in 64 mode, plays a bell-like rendition of this well-known bittersweet song.

```
10 PRINT "{SHT CLR}VALENTINE - JOSEPH R. CH
   ARNETSKI":PRINT
20 FORJ=1TO154:READK:CS=CS+K:NEXT:IFCS<>624
   5THENPRINT"DATA ERROR!":STOP
30 RESTORE:S=54272:V=S+24:FORJ=STOV-1:POKEJ
   ,0:NEXT:POKEV,15
40 READN,D:IFD=255THENPRINT"MAGIC!":END
50 POKES+1,N:POKES+5,9:POKES+15,9
60 POKES+4,17:FORDL=1TOD*250:NEXT
70 POKES+4,0:FORDL=1TO45:NEXT:GOTO40
71 DATA 59,3,67,1,71,1,67,1,71,1,67,5
72 DATA 59,2,67,1,71,1,67,1,71,1,67,6
73 DATA 59,2,67,1,71,1,106,3,94,1,89,1
74 DATA 79,7,71,1,67,1,106,3,71,1,71,2
75 DATA 67,1,71,5,71,1,67,1,119,3,71,1
76 DATA 71,2,67,1,71,5,71,1,67,1,134,3
77 DATA 71,1,71,2,67,1,71,3,79,1,89,1
78 DATA 119,5,71,2,79,1,89,1,79,1,89,1
79 DATA 79,3,71,5,59,2,67,1,71,1,106,3
80 DATA 94,1,89,1,79,7,59,2,67,1,71,1
81 DATA 67,1,71,1,67,3,71,2,79,1,89,1
82 DATA 79,1,89,1,79,3,71,2,79,1,89,1
83 DATA 79,1,89,1,79,3,71,1,0,0,255
```

Joseph R. Charnetski
Dallas, PA

\$2A6 Better video display—Don't forget your monitor's video controls, since their proper adjustment can make an amazing difference in your picture. When using my word processor, I turn the color control all the way down; by removing the color fringe around the letters, it makes things much easier on the eyes.

Lucy S. Terrier
Alton, IL

\$2A7 Colorful Print Shop—Output from the popular Print Shop program can be brightened up by using colored marker pens. It's easy to color The Print Shop text and designs, and with the range of colors available in

markers today, your creativity can be virtually unlimited. Give this idea a try the next time you do something with The Print Shop. It's extremely easy to do, and the results must be seen to be believed.

Roger Baillie
Kensington, PEI
Canada

\$2A8 Modem buyer's guide—Unless you've used both of them at length, it's hard to know whether to buy a 300-baud modem or a more expensive 1200-baud unit. I worked at 300 baud for over a year, then upgraded to 1200. In my opinion, the speed and convenience of 1200 baud make the faster modem a significantly better investment for most people.

Although 300-baud units are tantalizingly inexpensive, they are s-l-o-w, and their slowness diminishes the value of the on-line experience. In many cases, operations that are great at 1200 baud are tedious and unpleasant at 300. If you start out at 300 baud, you might wrongly decide that on-line work is not your cup of tea.

Some on-line services (QuantumLink, for example) have uniform rates, regardless of the speed of your modem. In those cases, your connect-time savings can quickly offset the additional purchase cost of a 1200-baud modem. (Let's say you're downloading an interesting program. What takes ten minutes at 1200 baud takes 40 minutes at 300. Compare the savings in money and personal time, and you'll start to get the picture.) Also, if one day you want to sell your modem, you'll find more buyers and better prices if you're offering a 1200-baud unit.

When choosing your modem, you should also consider how it connects to the telephone system. Most modems connect directly to the phone line via a modular connector; modular cables and connectors are readily available at Radio Shack and elsewhere. Some modems connect, not to the phone line, but to the handset, via a smaller modular connector. If your telephone doesn't use such a connector (and many don't), you can't use these modems with it at all. Also, handset connectors and cables can be hard or impossible to find in stores.

The final means of connection, seldom seen these days, is acoustic coupling. Here, there's no wiring at all between the modem and the phone line. Instead, the telephone handset is placed in a cradle with rubber cups, and the tones are coupled acoustically. This is the least desirable method of connecting your modem.

The bottom line is this: Unless you can't afford it, start off with a 1200-baud modem. And regardless of which speed you choose, look for a modem that connects directly to the phone line, rather than to the handset.

Louis F. Sander
Pittsburgh, PA

\$2A9 QuantumLink scrolling—Whenever text scrolls off the screen in QuantumLink, you can recall up to 85 lines of it at the press of a key. Just press the cursor-up key and watch the previous text scroll down from the top of the screen.

This feature is particularly useful when you're in an ongoing dialogue with other users, such as in the Conference Centers and in People Connection.

Al G. Bell
Boston, MA

\$2AA C-128 slow listing—When you want to slow down a C-128 listing or other printout, just press the Commodore logo key. This performs the same function as pressing the CTRL key on the Commodore 64.

Robert B. Cook
Braintree, MA

\$2AB C-128 bytes free—At power-up, the f8 function key activates the machine language monitor, which is a feature that most of us seldom use. I redefine that key to give me something more valuable—an instantaneous reading of the amount of remaining memory. Doing the magic is simple:

KEY 8, "?FRE(0)" + CHR\$(13)

Gerhard Schilling
Hemet, CA

\$2AC C-128 ESC key—There are several errors in the C-128 system guide's description of the escape sequences. On my machine, for example, ESC A activates Automatic Insert mode, while ESC C cancels it. ESC C does *not* cancel Quote mode, as stated in the manual.

ESC O is a powerful sequence that cancels Quote mode, RVS mode and the 80-column Flash (CTRL O) and Underline (CTRL B) modes. Contrary to the manual's description, ESC O does *not* cancel the Automatic Insert mode.

Be sure you use the proper technique with all escape sequences—first you press and release the ESC key, and then you press the others. It's totally different from using shift or CTRL, where the keys must be pressed at the same time.

Jim Borden
Carlisle, PA

\$2AD C-128 40/80 display key sense—This key's status can be detected by Peeking location 54533, then ANDing the result with 128. If the final result is zero, the key is depressed, or in the 80-column position. If the final result is 128, the key is released, or in the 40-column position.

Remember that the computer uses this key to set the display *only* when it is reset or when the stop/restore combination is pressed. Since ESC X can be used at any time to switch displays, the status of the 40/80 key cannot be used to tell which display is in use. With the Peek given above, it *can* be used as a handy push-on, push-off controller.

Ken Garber
Windsor, Ontario
Canada

\$2AE C-128 tab stops—The manual doesn't give the whole story on setting and clearing tab stops. You can clear all tab stops by pressing and releasing the ESC key, then pressing and releasing Z. You can restore the default tab stops by using ESC Y in the way described above. You can set or clear a tab stop by moving your cursor to the desired position and pressing [SHIFT TAB] or [CTRL X].

Jerry W. Jarvis
Spokane, WA

\$2AF Spritebusters—This sprightly sprite is out of sight! In white and red on any suitable background, he's *very* much worth seeing. Lines 10-90 are a multicolor version of the Sprite Demo program we've printed in our 1986 Special Issue. If you already have that program, just change line 60 to read as shown, add the sprite and watch that you don't get slimed.

```
10 REM MULTICOLOR SPRITEDEMO C-64 - LFS
20 POKE53281,16:PRINT"{SHFT CLR}{COMD 7}{4
  CRSR DNs}"
30 FORS=832TO894:READT:POKE5,T:NEXT
40 V=53248:POKE2040,13:REM SPRITE AREA
50 POKEV+21,1:REM DISPLAY SPRITE
60 POKEV+28,1:POKEV+37,1:POKEV+38,2:POKEV+3
  9,2:REM MULTICOLOR SETUP
70 POKEV+1,60:REM Y POSITION
80 FORJ=1TO255:POKEV,J:NEXTJ:REM X POS
90 LIST
91 REM SPRITEBUSTERS - TIM WHITECOTTON
92 DATA 000,001,064,000,021,080,000,085
93 DATA 064,003,085,064,005,153,240,005
94 DATA 085,240,053,085,124,245,153,127
95 DATA 065,101,255,213,087,255,197,095
96 DATA 195,085,127,065,193,253,087,195
97 DATA 253,087,255,213,085,255,085,067
98 DATA 253,085,079,061,085,124,015,215
99 DATA 240,015,255,240,003,255,192,000
```

Tim Whitecotton
Manson, IA

\$2B0 Racehorse—This program packs so much into a short space that we've waived Magic's usual limit of one screenful for the listing. Usable on the C-64 or on the C-128 in 64 mode, it shows an animated galloping racehorse, complete with jockey and sound effects. If you want to use the sprites elsewhere, they're presented in our normal form; each sprite corresponds to one position of the galloping horse.

```
10 PRINT"{SHFT CLR}{COMD 7}RACEHORSE - BOB/
  DAVE SNADER"
20 POKE53281,1:FORJ=832TO959:READK:POKEJ,K:
  NEXT:B=13:S=54296:V=53248
30 POKE2040,B:FORJ=0TO100:NEXT:POKEV+21,1:P
  OKEV+39,9:POKEV+1,150:POKEV,X:X=X+5
40 FORJ=5TO15STEP5:POKE5,J:POKE5,0:FORK=0TO
  50:NEXT:NEXT:IFX=255THENEND
50 B=14+(B=14):GOTO30
51 DATA 000,000,000,000,000,000,000,000
52 DATA 000,000,000,000,000,000,000,000
12 / RUN FEBRUARY 1986
```

```
53 DATA 001,000,000,003,192,000,003,128
54 DATA 000,030,016,048,063,188,121,190
55 DATA 127,135,255,255,015,255,240,015
56 DATA 255,224,007,255,192,007,255,192
57 DATA 015,057,224,018,000,176,011,128
58 DATA 144,004,069,096,002,002,000,000
59 REM
60 DATA 000,000,000,000,000,000,000,000
61 DATA 000,000,000,000,000,000,000,000
62 DATA 002,000,000,007,128,000,007,000
63 DATA 000,030,016,048,063,188,249,190
64 DATA 127,007,255,255,015,255,240,015
65 DATA 255,224,007,255,192,007,255,192
66 DATA 015,057,224,028,000,216,054,001
67 DATA 160,065,000,016,128,000,008,000
```

Bob and David Snader
Baltimore, MD

\$2B1 Easy SEQ file viewing—When I am writing programs that create sequential files, I often want to examine the files to find if they're being properly put together. I just use my Easy Script word processor and load the files as though they were regular Easy Script documents.

If I need to edit the file, I use Easy Script; then I save the file as I would any document.

Tom Kinsel
Sandusky, OH

\$2B2 Reading the status variable—When working with disk files, it's useful to check ST, the computer's status variable, to determine when the end of file has been reached. If you're also checking for disk errors by reading channel 15, you must always make the error check after the status check. Disk error checking sets ST to 64, which is also the end-of-file value.

Keith W. Marshall
San Juan, Trinidad

\$2B3 Disk drive speed adjustment—I adjusted the speed of my 1540 with the drive upside down. However, when I put it right-side up, there was a noticeable change in speed. Cure: While the drive was right-side up, I removed the necessary covers, then used a mirror to reflect the light onto the stroboscope pattern. In the absence of a fluorescent light source, I used the all-white light from my monitor screen.

Erkki I. Suikki
Vaasa, Finland

\$2B4 Fast Load flakiness—This popular cartridge is a wonderful help in disk operations, but it tends to cause programming problems. If something unusual occurs with my Fast Load-equipped computer, especially when working with files or the printer, I can usually resolve the problem by disabling my Fast Load cartridge.

Donald E. Griffey
Hopkinsville, KY

Continued on p. 86.

**It Talks!
It Recognizes!
It Writes Music!**
and more . . .



THE AMAZING VOICE MASTER®

Speech and Music Processor

Your computer can talk in your own voice. Not a synthesizer but a true digitizer that records your natural voice quality—and in any language or accent. Words and phrases can be expanded without limit from disk.

And it will understand what you say. A real word recognizer for groups of 32 words or phrases with unlimited expansion from disk memory. Now you can have a two way conversation with your computer!

Easy for the beginning programmer with new BASIC commands. Machine language programs and memory locations for the more experienced software author.

Exciting Music Bonus lets you hum or whistle to write and perform. Notes literally scroll by as you hum! Your composition can be edited, saved, and printed out. You don't have to know one note from another in order to write and compose!

Based upon new technologies invented by COVOX. One low price buys you the **complete system**—even a voice controlled black-jack game! In addition, you will receive a subscription to COVOX NEWS, a periodic newsletter about speech technology, applications, new products, up-dates, and user contributions. You will never find a better value for your computer.

ONLY \$89.95 includes all hardware and software.

For telephone demonstration or additional information, call (503) 342-1271. FREE audio demo tape and brochure available.

Available from your dealer or by mail. When ordering by mail add \$4.00 shipping and handling (\$10.00 for foreign, \$6.00 Canada).

The Voice Master is available for the C64, C128, all Apple II's, and Atari 800, 800XL and 130XE. Specify model when ordering.



For Faster Service on Credit Card Orders only:

ORDER TOLL FREE 1-800-523-9230



COVOX INC.

(503) 342-1271

675-D Conger Street, Eugene, OR 97402
Telex 706017 (AV ALARM UD)

From p. 12.

R Magic

\$2B5 Fast Load and drive 9—There's an easy way to make the popular Epyx Fast Load cartridge work with drive 9 (or any other drive) rather than the default drive 8. Just open a command channel to the drive in question, and Fast Load will adopt it as its default drive. Here's an example for drive 9:

OPEN 15,9,15

To return to drive 8, just do this:

CLOSE 15 : OPEN 15,8,15 : CLOSE 15

Donald E. Griffey
Hopkinsville, KY

\$2B6 Probability function—Here's a neat little function that evaluates to logic true or logic false (-1 or 0), with the probability of "true" depending on a value assigned by you:

10 DEF FNP(X)=RND(1)<X

In this case, FNP(.2) will be true 20% of the time, FNP(.5) 50% of the time, and so forth.

One use of this is to cause certain lines to be executed or not, at random, but with a fixed probability. For example, consider this line:

100 IF FNP(.25) THEN GOSUB 1000

When the line is executed, the program may or may not jump to the subroutine at 1000, but the probability that it will go there is one in four (.25).

I've used this technique to add interesting highlights to games, and I hope you can use it as well.

Davie Cooley
Dothan, AL

\$2B7 Input with variable default—Sometimes you may like to build a variable default value into an Input statement. That is, you want the default value to be based on conditions that vary from time to time when you're running the program. The way to do it is to print the prompting message and the variable, then use a Poke to place your cursor on the last character of your prompt. Here's an example:

PRINT "PROMPT";N; : POKE X,6 : INPUT N

The value of X is 211 for the C-64 and VIC; 202 for the Plus/4 and C-16; and 236 for the C-128.

The Input statement's question mark will appear directly after the prompt, followed by a space and the cursor flashing on the first digit of the number N. Just press the return key to make this your entry, or type another number to change it. The trick can also be used when the default is a string variable, but you must insert an extra space at the end of the prompt.

Joseph R. Charnetski
Dallas, PA

\$2B8 Unprotector—Have you been frustrated by C-64 programs that use REM [SHIFT L] to protect them from being listed? Have you laboriously gone through those

programs, deleting the offending lines by hand? Well, if you have, that drudgery is behind you. Type in the accompanying program, run it, then load a program containing some of those disturbing REMs. Enter SYS 49152, and, in a few seconds, all the shifted Ls will be removed. You can then list your program without encountering syntax errors.

```
10 PRINT "{SHIFT CLR}UNPROTECTOR - RALPH NEAL"
20 FOR J=49152 TO 49200: READ K: POKE J, K: CS=CS+K:
  NEXT J: PRINT
30 IF CS<>8220 THEN PRINT "ERROR IN DATA STATEMENTS": STOP
40 PRINT "SYS49152 REMOVES REM SHIFT L'S FROM": PRINT
50 PRINT "THE BASIC PROGRAM IN MEMORY. MAGIC!"
61 DATA 169,000,133,251,169,008,133,252
62 DATA 160,000,177,251,201,143,208,020
63 DATA 192,255,208,002,230,252,200,177
64 DATA 251,201,204,208,007,169,032,145
65 DATA 251,076,010,192,200,208,227,230
66 DATA 252,165,252,197,174,208,219,096
67 DATA 255
```

Ralph Neal
Nash, TX

\$2B9 Magazine indexing—If you subscribe to *RUN* or any other publication, you know how hard it can be to search the back issues for a single memorable article. I've learned that most issues contain one or two articles that are more interesting to me than all the others combined. When each issue arrives, I identify those articles and write their names on the binding of the magazine. It is amazing how much search time that eliminates thereafter.

James Albrecht
Kalispell, MT

\$2BA Cartridge repair—Don't discard faulty software cartridges until you've given them this CPR. First clean the metal contacts with a pencil eraser. If that doesn't help, disassemble the plastic case and use your fingers to apply even pressure to any socket-mounted components. Reassemble the case and try the cartridge again.

This procedure may or may not resuscitate your cartridge, but it works often enough to be worth a try.

Lee A. Seats
Mountville, PA

Circle 121 on Reader Service card.

PROTECTION REVEALED

Take command of your software. End the spiral of buying copy programs. *The Protection Revealed Handbook* unravels the puzzle of software protection. For authors and users—become a master of illusion. Learn how to protect or un-protect your software. Includes a large section on successful BASIC program security. Covers the latest evolution of copy protection techniques. Topics include:

Disk Errors	De-Compilers	Extra Sectors	Nibble Counting	Header Modification
Compilers	Density Changes	Gap Bytes	DOS Protection	Non-Standard Sectors
Half Tracks	Nibble Back-Up	Guard Band	Auto-Loaders	And much, much more

Reveals the mystical professional trade secrets of the Commodore 64 and 1541 Disk Drive. A disk containing 21 utility programs is included. This is the book for everyone!

Book & Disk

\$19.95

THE PROTECTOR

A menu-driven collection of programs which promises to mystify the curious. Basic file *Encryption and Decryption* are the heart of this system. Also includes autoboot maker, write and un-protect disks, fast disk eraser, ML to data statements, sector editor, relocates files to new location in memory, un-new scratched files, plus much more.

A dozen plus programs — the perfect companion for the book, *Protection Revealed*.
Disk

\$19.95

SUPER HELP

This is the programmer's friend — *three* aids for the price of one — a must for all users:

1. Poster size (21x25) screen and color memory map. Hang on the wall and never hunt for that poke location again.
2. One of the most complete C-64 memory maps available today. Compact and easy to read. Instructions included.
3. Set of 18 cheat cards. Includes: 1541 disk drive, DOS wedge, error messages, dasette, 1525, MPS-801, 1526, screen codes, Kernal ROM, sprites, color, sound, conversion charts, Pokes & Peeks, etc. Spiral bound.

All Three Items For:

\$15.95

PROGRAMMER'S KIT

Over 150 ready-to-run subroutines. Easy instructions on how to incorporate into your own programs. Why re-invent the wheel? Your time is valuable. Some of the types included are: TIS, protection, disk operation, printer operation, sorts, joy-ticks, input, graphics, complete alphabets, graphic screen prompts, sound, random choice. Program the easy way. Full documentation included.

Disk

\$18.95

PHONE BOOK/POSTAL CLERK

A must for small businesses, clubs, schools, or individuals.

2,500+ ENTRIES

Menu-driven, compatible with all printers. Auto save entries and changes. Sorts and prints phone book or address labels by name, city, state, ZIP code, or group. Eight user-definable mail lists in one program. Keep groups, friends, clubs, Christmas lists, etc. all separate.

Disk

\$24.95

BRAND X — THE DISK LIBRARIAN

Has your disk library grown? Can't find your favorite program when you need it? Are you tired of odd labels? If you answered "yes" to any of the above, you need *Brand X*. *Brand X* can catalog 40-plus disks in one file — this is over 4000 programs. Save the catalog file, add to, change, or delete when you want. Get rid of duplication and save disk space. Identifies 14 types of files. Disk commands include: format (in 10 seconds), validate, scratch, change disk ID, change disk name, plus directory. Prints custom disk labels (great for the generic user), lists used ID's and disk names, catalogs in one, two, or three columns. End disk confusion with *Brand X, The Disk Librarian*.

Disk

\$19.95

\$-SAVER SWITCH

Use the *\$-Saver Switch* to connect two computers to one printer, or one disk drive. Better yet, use only one drive and one printer for two computers. A flip of the switch changes the device from one use to the other. Save dollars where more than one computer needs to access the same device. Plugs in — no alterations or extras.

**V-20, C-64, C-16,
Plus 4, C-128**

\$29.95

Your order will be shipped within 48 hours.

VALUE-SOFT

9513 S.W. Barbur Boulevard, Dept. A-56
Portland, Oregon 97219 (503) 246-0924

ATTENTION GUN RELOADERS: BALLISTICS

Check trajectory for all popular rifle bullets by weight, caliber, or style. Includes tables for *Hornady* and *Speer* bullets, plus others. Allows for standard metro or high altitude and low temperatures. Prints out table of trajectory (choice of range increments), bullet drop, wind deflection, and more. If you reload your own shells, this program is a must!

Disk

\$39.95

Include check or money order — or charge your order to your VISA/MasterCard account.

Add \$2 shipping on orders under \$100 total. All orders over \$100 will receive FREE shipping.

Dealer Inquiries Welcomed

CREATED BY USERS FOR USERS

UN SCRIPT 64
HUN'S POWERFUL
NEW WORD PROCESSOR

Commodore C-128/C-64 Home Computing Guide

U.S.A. \$2.95
CANADA \$3.95

RUN

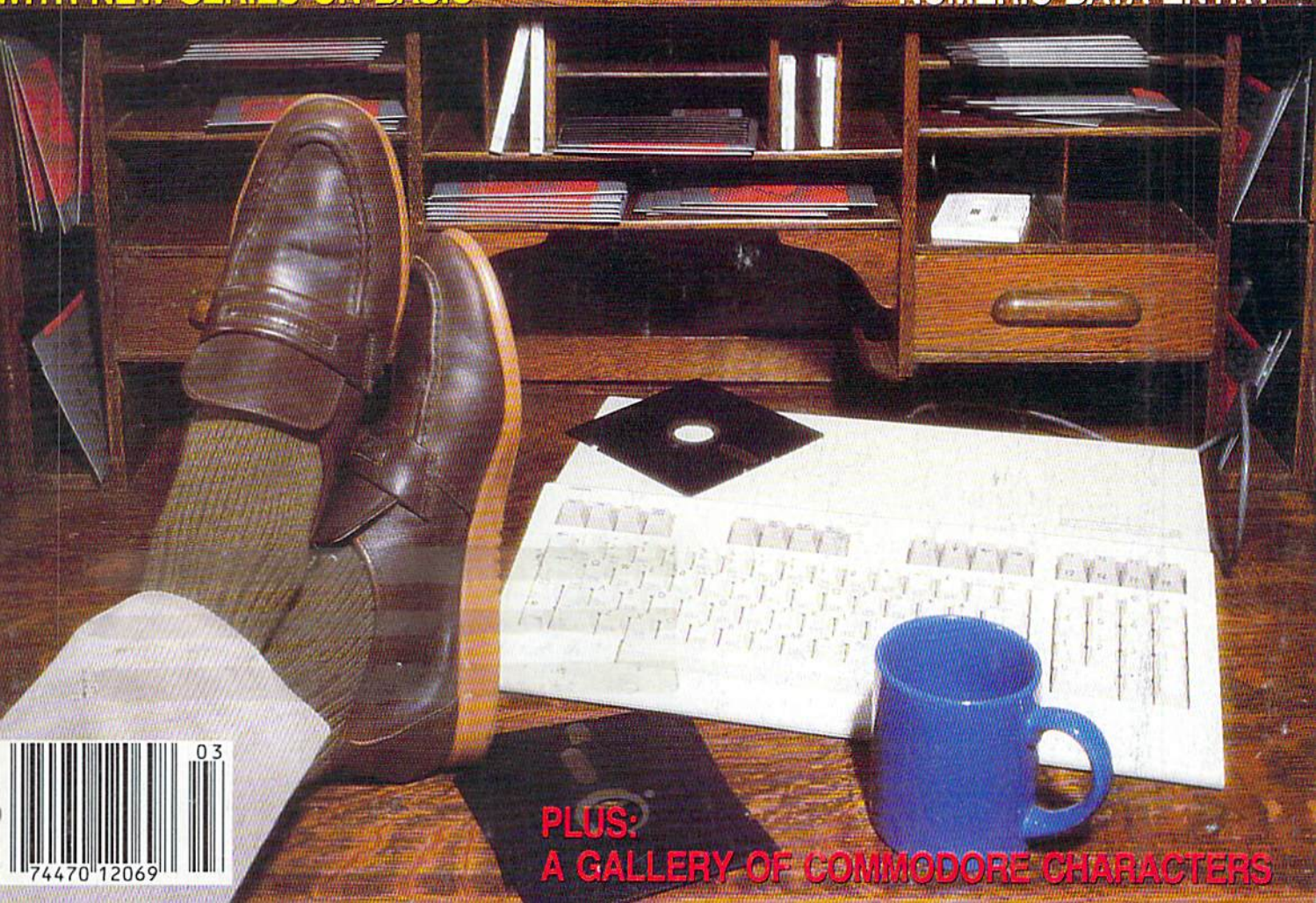
March 1986 A CWC/I Publication

C-128 PRODUCTIVITY PUT YOUR COMMODORE TO WORK!

TELECOMPUTING WORKSHOP
How to Get On-Line...
And Stay There!

SHARPEN YOUR
PROGRAMMING SKILLS
WITH NEW SERIES ON BASIC

CREATE YOUR OWN KEYPAD
FOR FAST AND EASY
NUMERIC DATA ENTRY



PLUS:
A GALLERY OF COMMODORE CHARACTERS

MAGIC



Compiled by LOUIS F. SANDER

Once again, through this column, wand-wrought works will waken you and wizardly words will waft you to a wondrous world of computing.

Month after winning month, your Magic continues to amaze that world. You conjure up great tricks, in ever greater abundance, with each iteration more stunning than the last. And selecting those to publish is like picking at the Gordian knot. So if you send in a trick, or if you write for any reason, remember to say what sorts of tricks you like. You never know—your wishes may come true!

In the meantime, though, there's work to be done, and the Magic of March awaits us. Ladies and gentlemen, start your computers...

\$2BB March Hare—His live appearances are legendary. Since Alice in Wonderland, his name has been a household word. But until this very moment, the March Hare has never appeared on a monitor screen. Now Magic has lured him there, where his wonders await you.

Run the following program on your C-64 or C-128 (in C-64 mode). To see Hare's classic role, press and release the space bar.

```
10 REM MARCH HARE - BOB & DAVID SNADER
20 PRINT "{SHIFT CLR}":V=53248:L=170:S=2040
30 FORN=832TO959:READQ:POKEV,Q:NEXT
40 POKEV+21,3:POKEV+33,6:POKEV+39,0
50 POKEV+40,1:POKEV,L:POKEV+1,L
60 POKEV+2,L:POKEV,13:POKEV+1,14
70 IFPEEK(197)<>64THENL=140
80 POKEV+3,L:L=170:GOTO70
81 DATA 000,000,000,000,000,000,000,000
82 DATA 000,031,128,252,120,000,015,031
83 DATA 255,252,007,255,240,007,255,240
84 DATA 003,255,224,003,255,224,003,255
85 DATA 224,007,255,240,007,255,240,007
86 DATA 255,240,015,255,248,015,255,248
87 DATA 015,255,248,031,255,252,000,255
88 DATA 128,000,000,000,000,000,000,000
91 DATA 001,128,192,001,193,192,000,193
92 DATA 128,000,099,000,000,062,000,000
93 DATA 107,000,000,054,000,000,156,128
```

8 / RUN MARCH 1986

```
94 DATA 000,193,128,000,255,128,000,255
95 DATA 128,001,099,064,001,107,064,001
96 DATA 136,192,001,255,192,000,255,128
97 DATA 012,127,024,015,221,248,000,000
98 DATA 000,000,000,000,000,000,000,000
```

Bob Snader and David Snader
Baltimore, MD

\$2BC Ultimate program backup—Even if you back up religiously, your valuable programs might be lost. For instance, when you don't use a program for a while, you lose track of its name and importance. Once that happens, it's easy to erase it while weeding out the junk. Another example: If the wrong disk is in the drive when you issue a format command, then goodbye, good software!

The ultimate, perfect, impossible-to-erase backup system exists, and it's as close as CMD4. When a program absolutely, positively must stay in your hands forever, just list it on your printer, then file it away in a drawer. Hard-copy listings are remarkably durable and remarkably resistant to trashing. If magnetic disaster strikes, no matter how long the program, you can always retype from the listing.

Louis F. Sander
Pittsburgh, PA

\$2BD Backing up while typing—We all know the merits of making disk or tape backups of all important programs. On a smaller scale, when you are working on a program and are making changes to a line, try listing the line twice on the screen. One listing is for you to edit; the other is your backup. If you ruin the line you're editing, you can move your cursor up to the untouched one and start all over again.

Bertram Schulman
Valley Stream, NY

\$2BE Line numbers for debugging—When debugging, it's common to insert statements that will later be deleted. It's useful to give them unusual numbers, not otherwise used in your program. Numbers 13, 113 and 273 are useful examples. They are easy to find when you're ready to delete them, and you stand little chance of deleting a wanted number by mistake.

A. D. Entwistle
Kingston, Ontario
Canada

\$2BF Non-random RND—Beware of generating random numbers using RND(0)!

To see why, try running this little program. As you can see, it *should* randomly fill the C-64 screen with white uppercase A's. Run it, and you'll see that this is far from the case.

```
10 X=INT(RND(0)*1024):POKE 1024+X,1:POKE 55296+X,1:
GOTO 10
```

When you've seen how it works with zero as an argument for RND, run it again with other values, and observe the striking difference.

Davie Cooley
Dothan, AL

\$2C0 C-64 screen-line erasing—It is known that line L can be deleted from the C-64 screen by:

```
POKE 781,L:SYS 59903
```

You may not know, however, that the first N+1 characters of a line can be deleted by:

```
POKE 781,L:POKE 782,N:SYS 59905
```

Of course, L must be between 0 and 25, and N must be between 0 and 39.

Samir S. Chebli
Beirut, Lebanon

\$2C1 C-128 boxed spirals—Here's a simple but interesting graphics one-liner. Try changing the value of A.

```
10 A=11:GRAPHIC1,1:FORJ=0TO360STEP A:BOX1,0,
0,319,199,J,0:NEXT:REM CHANGE A!
```

Matt Woodring
Cordell, OK

\$2C2 C-128 Magic Boot—This program modifies any disk so that the 128, when turned on or reset in 128 mode, will automatically run the first Basic program in its directory. Here is how to cast the spell:

1. Select the Basic program you'd like to load and run automatically. We'll call this the Target Program.

2. Format a disk, then save the Target Program as the first program on it. This becomes the Target Disk. (If you'd like, you can save other programs on the Target Disk as well. Just be sure the Target Program is the first one you save.)

10 / RUN MARCH 1986

3. Remove the Target Disk and replace it with one containing the Magic Boot program.

4. Load Magic Boot, but do *not* run it at this time.

5. Put the Target Disk back into your drive; then run Magic Boot. The drive will spin, and your Target Disk will be converted.

6. Test the conversion by pressing the reset button. If all is well, the Target Program will automatically load and run.

Magic Boot should work on any Commodore disk drive when used with the C-128 in 128 mode. If the Target Disk gets close to being filled, or if it contains some large relative files, there's a chance that Magic Boot's magic will be undone.

The program works because, when the computer is turned on or reset in 128 mode, it checks the disk for the letters "CBM" at the start of track 1, sector 0. If it finds them, it loads and executes whatever machine language program follows them on that sector. Our program puts the letters there, followed by a machine language program to load and run the first Basic program on the disk.

```
10 PRINT"{SHFT CLR}128 MAGIC BOOT - HARV HA
RRIS"
20 DIMK(67)
30 FORJ=1TO67:READK(J):CK=CK+K(J):NEXT
40 IFCK<>6318THENPRINT"DATA ERROR":STOP
50 OPEN15,8,15:OPEN8,8,8,"#"
60 FORJ=1TO67:PRINT#8,CHR$(K(J));:NEXT
70 PRINT#15,"B-W:"8;0;1;0
80 CLOSE8:CLOSE15
81 DATA 066,077,000,000,000,000,000,042
82 DATA 000,234,234,234,234,165,174,141
83 DATA 016,018,165,175,141,017,018,076
84 DATA 027,011,169,007,133,208,169,147
85 DATA 141,074,003,169,151,141,075,003
86 DATA 169,082,141,076,003,169,085,141
87 DATA 077,003,169,078,141,078,003,169
88 DATA 153,141,079,003,169,013,141,080
89 DATA 003,096,001
```

Harv Harris
Wichita, KS

\$2C3 C-128 Unnew program—This works in 128 mode only. Type the accompanying program and save it as UNNEW128 MAKER. Then run it. If you've made no typing errors, it will create a program called UNNEW128 on the disk you have in the drive. (If you've made errors, correct them, scratch the old version and save the correct one.)

Now, if you press the reset button or use the New command by accident, just enter:

```
BLOAD "UNNEW128"
```

```
then type
```

```
SYS2850
```

When you press the return key, your program will be resurrected.

```
10 PRINT"{SHFT CLR}UNNEW128 MAKER - HARV HA
RRIS"
20 FORJ=2850TO2923:READK:CS=CS+K:POKEJ,K:NE
XT
30 IFCS<>8443THENPRINT"DATA ERROR":STOP
```

Continued on p. 88. →

From p. 10.

Listing continued.

```
40 BSAVE"UNNEW128",P2850 TO P2923
41 DATA 160,003,200,177,045,201,000,208
42 DATA 249,152,105,001,160,000,145,045
43 DATA 165,046,160,001,145,045,234,165
44 DATA 045,133,065,165,046,133,066,160
45 DATA 000,162,000,177,065,201,000,240
46 DATA 010,200,192,000,208,243,230,066
47 DATA 076,067,011,232,200,192,000,208
48 DATA 002,230,066,224,003,208,228,200
49 DATA 140,016,018,165,066,141,017,018
50 DATA 096,000
```

Harv Harris
Wichita, KS

\$2C4 Print Using on the C-128—The C-128's system guide doesn't give many examples of the new Print Using statement. The accompanying program illustrates many of its features and is most instructive to work with. It simulates a report for a simple checkbook program.

Enter the month's name in full (e.g., MARCH). Try different amounts, from a penny to over \$10,000, entering some with decimal points and some without. Try different lengths of input in the other areas, as well. Notice how the output lines up on your screen and how it changes as your input changes.

The example demonstrates, among other things, how you can assign a variable name to a format, then use the format anywhere else in the program. It shows how text and cursor-control characters can be used in the format as well, and it shows the use of several of the Print Using format characters.

```
10 PRINT"(SHIFT CLR)PRINT USING DEMO - HELLM
   AN{CRSR DN}"
15 F1$="{CRSR DN}{3 SPACES}### {CRSR LF}>##
   {CRSR LF}, 1986{4 SPACES}NUMBER: ####"
20 F2$="AMOUNT #####.##{8 SPACES}TO: #####
   #####"
25 INPUT "{2 SPACES}MONTH";M$
30 INPUT "{4 SPACES}DAY";D$
35 INPUT "CHECK#";C$
40 INPUT "AMOUNT";A$
45 INPUT "TO WHOM";T$
50 PRINT USING F1$;M$,D$,C$
55 PRINT USING F2$;A$,T$
60 PRINT:GOTO25
```

James C. Helman
K. I. Sawyer AFB, MI

\$2C5 C-128 Print Using bug—The system guide says you can use

```
PRINT#1 USING
```

which will allow you to print to the printer in a predetermined format. The only trouble is, it doesn't work that way. You need a comma, like this:

```
PRINT#1,USING
```

Of course, you can use any legal logical file number in place of the 1.

Jerry W. Jarvis
Spokane, WA

\$2C6 C-128 stop key trap—In the new 7.0 Basic, the Trap statement treats a stop-key press as an Error 30. If you're using Resume to continue your program after errors are encountered, the stop key will no longer function. To activate the stop key while avoiding other errors, insert this before the Resume statement:

```
IF ER=30 THEN END
```

Jerry W. Jarvis
Spokane, WA

\$2C7 C-128 lines & sounds—This one-liner gives an entertaining random display. It shows how much can be done in a single line when you have 160 characters to work with.

```
1 COLOR0,1:COLOR4,1:COLOR3,RND(0)*14+2:GRAP
  HIC3,1:J=RND(0)*5+1:N=RND(0)*7:DRAW3,N*45
  .7,J*33TOJ*N*7,N*28.5:P$="O"+CHR$(48+J)+C
  HR$(65+N):PLAYP$:GOTO1
```

J. C. Vollmer
Prior Lake, MN

\$2C8 Plus/4 and C-16 good news—If you own one of these computers, don't be disheartened by the apparent lack of software and support. Your version of Basic has much in common with that for the C-128, so many 128 tricks and programs will be directly applicable to your machine. In other cases, C-128 material can be easily converted. You should try to acquire the *Commodore 128 Personal Computer System Guide* (which comes with the computer), so you can learn the important differences. Knowing them, you can work out the conversions. C-16 owners should also get a Plus/4 manual, because those two machines work very similarly. The Plus/4, however, has vastly superior documentation.

Also, don't forget that your Basic has its roots in the Basic for the C-64. The more you know of the C-64, the more you can convert its huge array of software. A *Commodore 64 Programmer's Reference Guide* might be a good investment for you, even though much of it will not apply.

Louis F. Sander
Pittsburgh, PA

\$2C9 Ergonomic urge?—Try raising the rear of your computer about an inch off the desk. For me, this vastly improves the keyboard angle, making typing much less fatiguing. It also improves the air flow through the computer.

Bertram Schulman
Valley Stream, NY

\$2CA 1526/MPS-802 print troubles—Sometimes the output from this printer contains maddening gaps where nothing is printed, or where only the bottoms of the letters show up. The problem arises when the ribbon gets pulled out of position by the printhead.

It's easily solved by increasing the tension where the ribbon emerges from its cartridge. I roll a strip of $\frac{3}{8}$ -inch-wide paper into a $\frac{3}{8} \times \frac{1}{2} \times \frac{3}{8}$ -inch pad, then place it as a brake shoe on the horn at the right side of the ribbon cartridge. I wrap it snugly with tape, and my troubles are gone for the life of the ribbon.

In case you cannot visualize it, we have a ribbon sandwich wrapped in tape. The ribbon is squeezed between the paper wad and the plastic horn of the cartridge, while the tape wraps everything up and keeps the pressure on. An alternative is to tape the paper wad to the silver head-position lever. If it's positioned just right, it applies pressure at the appropriate point.

Quinze Vingtsix
West Chester, PA

\$2CB Okimate money-saver—After extensive use, this printer begins to print illegibly, and you reach for your manual to find the order form for a new print head. If you're smart, you'll first reach for a cotton swab and some alcohol. Use them to clean the black part of the print head, and you can probably hold off on the new one.

Joe Buckshaw
Holbrook, NY

Circle 350 on Reader Service card.

FLOPPY HOUSE

16 S. Chestnut Street, Box 308, Palmyra, PA 17078

Adventure Const. Set	\$29.95
AMIGA Software	
now arriving	CALL
Beachhead II	\$24.95
Bat. Incl. Home Org.	
Pgms. ea.	\$13.95
Doodle	\$26.95
Elite	\$21.95
Fight Night	\$21.95
Flight Simulator II	\$32.95
Gary Kitchen's Game	
Maker	\$27.95
Hardball	\$21.95
ISEPIC	\$52.95
M.P.P. 1064	
Modem	\$59.95
MicroLeague	
Baseball	\$27.95
1984, 1985, Wild Ser.	
or All Star	\$13.95
Mirage Data Base or	
WordProc.	\$38.95
Newsroom	\$34.95
Newsroom Clip Art	
Collection	\$21.95
Night Mission Pinball	\$21.95
Paperback Writer 128	\$39.95
Screen Dumper64	\$17.95
Skyfox	\$24.95
Star Rank Boxing	\$21.95
Superbowl Sunday	\$20.95
Ultima IV	\$42.95
V.I.P. Terminal	\$29.95
Voice Messenger	\$43.95
Xetec Sup. Grap. Int.	\$62.95

*** FREE! ***

(With any software order) — an excellent Public Domain version of an arcade hit game on its own disk.

LEROY'S CHEAT SHEETS

All titles \$2.95
(Add \$1.00 for mailing)

ORDERING & TERMS

— M.C. and VISA accepted with no charge in the continental U.S.A.

— \$2.50 shipping charge on orders under \$100.00

— PA residents. Please add 6% sales tax

— Prices subject to change without notice

TOLL FREE
1-800
633-8699
In Pa. Call
A.C. 717
838-8632

Circle 161 on Reader Service card.

DATAPRO

NEW

EXCLUSIVELY FOR THE

128

POWERFUL

DATA BASE · WORD PROCESSOR

- **EASY TO USE** TOTALLY MENU DRIVEN
- **MASSIVE** STORAGE CAPACITIES
- **FREE FORM** DESIGN YOUR OWN
- **PRINT** CUSTOM REPORTS · MAILING LABELS · LETTERS
- **FAST SEARCH** ANY FIELD PARTIAL OR FULL ITEM
- **FAST SORT** ANY FIELD ALPHA · NUMERIC
- **DISK UTILITIES** COMPLETE DISK MANAGEMENT
- **HI-RES SCREENS** · **SOUND** · **CLOCK**

FREE

GRAFIX

FOR THE 128

COMPUTER ASSISTED DESIGN
WITH PURCHASE OF DATAPRO

SATISFACTION GUARANTEED

RETURN WITHIN 10 DAYS FOR FULL REFUND

Send check or money order for
To I.N.C. Computers Inc.

\$399.95

U.S.

106 Brampton Rd.
London, Ontario, Canada
N5Y 2C6

1-519-434-3376

VISA call collect

1-519-679-9456

Circle 156 on Reader Service card.

100% Commodore Compatible
and only **\$139.00**



FSD-1 5 1/4" Disk Drive

The FSD-1 Disk Drive is a versatile and efficient disk drive built for the Commodore series of personal computers. This disk drive is fully compatible with the Commodore 64 computer and directly replaces the Commodore 1541 Disk Drive, giving much better performance in terms of data loading and writing speed and memory buffer size.

Special Features

- Full 6 month warranty.
- Slim line construction (low profile).
- All metal vented chassis.
- Solid state power supply.
- Dual serial port with chaining option.
- 5 1/4 inch industry standard format.
- Positive lever lock (eliminates "pop out" problem).

To order call toll free
1-800-356-5178

Visa and Mastercard are welcome. Allow \$5.00 shipping and handling. Or mail your order with check or money order to:

ECI

Emerald Components International
P.O. Box 1441
Eugene, OR 97440
Tel: 503-683-1154

Remember, no sales tax in Oregon

The Commodore C-128/C-64 Home Computing Guide

U.S.A. \$2.95
CANADA \$3.95

RUN

April 1986 A CWC/I Publication

POWER UP YOUR HOME FOR SECURITY, SAVINGS AND CONVENIENCE



LOAD AND RUN
YOUR PROGRAMS
IN A SINGLE
KEYSTROKE!

ADD FOUR SUPER
UTILITIES TO YOUR
CP/M LIBRARY

SING ALONG
WITH YOUR C-64



PLUS:

—RUN Script, Part II

—Terminal Programs Explained

MAGIC



Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun. MAGIC is doing what cannot be done.

Every month, *Magic* brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). *RUN* will pay up to \$50 for each trick accepted.

Send your tricks to:

MAGIC
RUN Magazine
80 Pine St.
Peterborough, NH 03458

If you enclose a self-addressed stamped envelope, we'll send you a Trick Writer's Guide. Readers outside the United States may omit the stamp.

Welcome once again to *Magic*. Our April alchemy includes an Easter Bunny game, a joke for April Foolsers and a delicious diversity of daringly dazzling delights. Your fellow readers have sent their best work to us, in hopes that it will be helpful to you. So, enjoy your friends' enhancements, applaud your fellows' amusements and use your colleagues' utilities. If there's a good trick up your own sleeve, write it down and send it in.

\$2CC Star SG-10 special mode—This popular printer has an undocumented mode in which it prints everything sent to it as hex digits, much like a machine language monitor. The mode is useful in debugging faulty print routines, since it lets you see exactly what the printer is receiving, control sequences and all.

To activate the Hex mode, turn your printer off, then press both the formfeed (FF) and linefeed (LF) buttons. Turn the power on, keeping these buttons pressed until the printer's beeper sounds. Release the buttons, and your printer will be in Hex mode until it is either re-initialized or powered down.

James Judd
Ballwin, MO

\$2CD Modem cable tip—I used to connect my modem by disconnecting the telephone handset cable at the handset, then plugging it into the modem. It was always hard to get to the modem, which was out of the way behind my computer. To make things easier, I bought a coiled handset cord, which I now leave permanently connected to my modem. When the time comes to connect, I unplug the handset from the phone base, then plug in my new modem cord. The phone is more mobile and accessible than the modem.

Michael T. Martin
Phoenix, AZ

\$2CE Modem modification—Some bulletin board systems are very difficult to connect to, since they have far more callers than available lines. Many terminal programs, when they encounter a busy signal, will keep redialing until they get through. This is great, but usually you, the operator, must keep your eye on things so you know when the connection has been made.

You can free yourself for other tasks if you wire a switch and a small piezoelectric buzzer (Radio Shack #273-060) across the modem's carrier-detect LED. Close the switch before dialing, and when the LED finally goes on, your buzzer will start to buzz. Stop the noise by opening the switch, and proceed with your telecommunicating.

C. A. F.
Throop, PA

\$2CF 300-baud speedup—If you don't have a 1200-baud modem, here's a little consolation. It doesn't work with all modems or all terminal software, but when it does, it increases your modem speed to 345 baud, a 15 percent increase. (At these slow speeds, every little bit counts!) The trick is to add this line to your terminal program after the modem's Open statement:

POKE 665,240 : POKE 666,11

The terminal program, of course, has to be written in Basic.

Greg Long
Hillsboro, OR

\$2D0 Flight Simulator II coordinates—The manual omits the coordinates for some important landmarks:

World Trade Center—17060 N, 20982 E
Brooklyn Bridge—17054 N, 20991 E
Empire State Building—17073 N, 20991 E
Statue of Liberty—17049 N, 20971 E

When entering coordinates from the Editor mode, don't start out on the landmark itself, or you'll fall to the street like King Kong.

Kim Moser
New York, NY

\$2D1 Flight Simulator II jet assist—In the Editor mode, if you type 65535 for your throttle setting, you can cruise at 189 knots and climb at 1600 feet per minute. Also, if you select the right fuel tank prior to entering WWI Ace mode, your effective range is doubled.

Nicholas R. Clarke
McKinnon, Victoria
Australia

\$2D2 Sky Travel on the bias—In this popular program, you can move diagonally by using the @ sign, asterisk, semicolon and equals-sign keys. It greatly speeds up getting to different items in the sky.

Roy Liesegang
Randolph, NJ

\$2D3 Calc Result easy save—Contrary to what the manual implies, you can use the Save with Replace command in this program. When asked for a filename, type "@0:filename". The @ will show up as a hyphen, but the file on the disk will be replaced by the one you're now saving.

Lowell Unger
Wynyard, Saskatchewan
Canada

\$2D4 Selecting sheet music—Commodore computers have a great deal of musical talent, but they are limited to three voices (four for the Amiga), or, in other words, to three notes playing at once. Unfortunately, most sheet music is arranged for the keyboard world, where up to ten notes can be playing at once (one for each finger), and where a huge double staff is used. When you computerize such music, choosing the three most important notes can drive you back to spreadsheets.

If you want to make life easier, buy your sheet music in the finger-picking guitar department of a well-stocked music store. Most finger-picking guitar arrangements are in a three-voice format, with all voices noted on one staff. The

finger-picking style puts a complete lead, harmony and bass arrangement on a single instrument and is tailor-made for Commodore computers.

Dave Rensberger
Brea, CA

\$2D5 Bunny Hop—This game for the C-64 or C-128 in 64 mode lets you put the Easter Bunny into his basket. To make him hop, hold down any key for a second or so. The longer you hold it, the farther Mr. Rabbit jumps. If he misses the basket, he returns to his starting place and lets you try again. When you put him into the basket, the program tells you how many hops it took.

You can make the game more difficult by increasing the value of X in line 35. That moves the starting point closer to the basket, making the target harder to hit.

```
10 PRINT"{CTRL 8}{SHIFT CLR}{CTRL 1} MAGIC B
UNNY HOP - BOB & DAVE SNADER{CRSR DN}"
15 H=1:V=53248:POKE2040,13:POKE1805,76:POKE
1808,122
20 FORJ=832TO879:READK:POKEJ,K:NEXT
25 FORJ=880TO896:POKEJ,0:NEXT
30 POKEV+21,1:POKEV+33,5:POKEV+39,1
35 X=50:Y=192:F=0:G=0:POKEV,X:POKEV+1,Y
40 IFPEEK(197)=64THENGOTO40
45 IFPEEK(197)<>64THENF=F+.04:GOTO45
50 POKE198,0:POKEV,X:X=X+F:POKEV+1,Y
55 Y=Y-1.5*F+G:G=G+.05:IFY<0THENY=0
60 IFY<192ANDX<255THENGOTO50
65 IFX>195ANDX<212THENPRINT" YOU DID IT IN"
;H;"HOPS":END
70 FORJ=0TO700:NEXT:H=H+1:GOTO35
71 DATA 008,000,000,012,000,000,014,024
72 DATA 000,007,060,000,001,066,000,000
73 DATA 224,000,000,248,000,000,240,000
74 DATA 003,128,000,007,128,000,015,128
75 DATA 000,031,224,000,031,032,000,127
76 DATA 000,000,126,000,000,031,240,000
```

Bob Snader and David Snader
Baltimore, MD

\$2D6 April 1 Magic—If you appreciate practical jokes, you'll have endless fun with these April Fools subroutines. The first one simulates the Ready prompt, leading one to believe that the main Basic program is finished. However, nothing could be further from the truth.

The first subroutine is composed of lines 699-750. These give the bogus Ready prompt, which, for the next 30 seconds, waits for you to press any key. If you do, an interesting message appears on the screen, and the 30-second timer is reset. If no key is pressed, the subroutine finishes so quietly that nobody is the wiser.

To get the second subroutine, replace lines 740 and 750 with lines 770 and 780. This time, the subroutine also waits 30 seconds. If a key is pressed during this period, the subroutine terminates unobtrusively, and your computer will accept normal keyboard input. But if the Magic key defined in line 700 is pressed, program execution is transferred to line 780. You can put anything at all there, including hundreds of additional program lines.

As printed, the program runs on the C-64 or VIC-20.

Continued on p. 96.

From p. 10.

For the C-128, you must change the value of C in line 700, using the number listed in line 790. You can change the program's time delay or the Magic character by making appropriate changes to line 700. If you disable your stop key before executing the subroutine, you'll keep others from discovering your trick.

```
699 REM LARSON E. RAPP
700 C=204:DELAY=5000:MAGIC$="*":POKEC,0
710 PRINT"{CRSR DN}READY.":FORJ=1TODELAY:GETAS
720 IFA$="THENNEXT:PRINT"{2 CRSR UPS}";:END
730 POKEC,1:J=DELAY:NEXT
740 PRINT"{CRSR UP}{CRSR LF}HANDS OFF, BUDY!"
750 FORK=1TO500:NEXT:RUN700
760 :
770 IFA$<>MAGIC$THENPRINT"{2 CRSR UPS}";:END
780 PRINT"PROGRAM CONTINUES HERE":STOP
790 REM C=2599 FOR C128, 204 FOR VIC&C64
```

Larson E. Rapp
Newington, CT

\$2D7 Super Bowl Sunday—To get a super pass-completion percentage on this game, throw short passes to your receivers, with three backs also going out for the pass.

Jason Simpkins
Millersburg, PA

\$2D8 Logo and Print Shop—You can use Logo to create pictures to work with the popular Print Shop program. After creating your Logo picture on the screen, type:

SAVEPICT "filename

This saves the picture as a 33-block hi-res file, named filename.PIC1, and as a five-block color file, named filename.PIC2. The first one will load into your Screen Magic when you choose the Get Screen option. After loading it, you can add text if you wish, and you can load or save the altered screen at will.

Thomas M. Trocco
New York, NY

\$2D9 Color/no-color monitor—Some software locks the screen into its own colors, which are not necessarily legible or attractive. If you use the Commodore 1701 or 1702 monitor, connected through three wires on the back, there's a solution close at hand. Disconnect the chroma cable, and your display will appear in black, white and various shades of gray. The chroma cable is the one that carries the color signals. It plugs into the red-colored jack.

Michael F. Lehman
Los Angeles, CA

\$2DA Too-small video display—Sometimes the top or bottom lines of your screen may not show up on your monitor or television. When that happens, the problem is not in your computer, but in the adjustment of your

display. Look on its front or rear panel for two controls marked "vertical height" (or "size") and "vertical linearity." Their names may be somewhat different, or they may be abbreviated in some way. A few inexpensive sets do not have them at all.

When you find the controls, first fill your computer screen with text or keyboard graphics. Next, adjust the two controls so you can see the top and bottom lines, and so the lines in between are not distorted. You'll notice that the height and linearity controls interact somewhat, affecting the picture's size and uniformity. The best method is to adjust one and then the other, going back and forth until your picture is satisfactory.

If the controls are on the back panel, you can position a mirror so you can see the screen while adjusting them.

Bernhardt Sandler
Venice, CA

\$2DB Screen Wiper—This routine for the C-64 or VIC wipes the screen clear in two visually interesting ways. It's one of the most elegant and intriguing screen effects we've seen.

The direction of this screen-clearing technique is controlled by the value of C1\$ in line 500. If it's a left-arrow symbol, it clears your screen like a theatre curtain pulled from the sides toward the center. If C1\$ is an up-arrow symbol, the curtain works from the top and bottom.

As printed, the routine is for the C-64. For the VIC, substitute line 580 for line 500.

```
480 REM MAGIC WIPER - J.R.CHARNETSKI
490 REM WIPES SCREEN UP/DN OR SIDEWAYS
500 C1$="{LEFT ARROW}":REM WIPE {UP ARROW}
    OR {LEFT ARROW}
510 C1=23:C2=19:C3=24:C4=39:C5=59903:REM C6
    4
520 FORJ=0TOC1:C2$=C2$+CHR$(32)+CHR$(157)+C
    HR$(17):NEXT:C2$=C2$+CHR$(145)
530 FORJ=0TOC2:IFJ=0THENPOKE781,C3:SYSC5
540 IFC1$="{LEFT ARROW}"THENPRINT"{HOME}";T
    AB(J);C2$:PRINT"{HOME}";TAB(C4-J);C2$
550 IFC1$="{UP ARROW}"THENPOKE781,J:SYSC5:P
    OKE781,C3-J:SYSC5
560 NEXT:PRINT"{SHIFT CLR}";:C2$="":RETURN
570 :
580 REM LINE 500 FOR VIC: C1=21:C2=11:C3=22
    :C4=21:C5=60045:REM VIC
```

Joseph R. Charnetski
Dallas, PA

\$2DC Rearranging directories—Many computers and disk accessories provide an easy way of loading the first program in your disk directory. It's easy to put any program into the first position, even if another one is there at the moment. The secret is in using the Copy command, which can make a duplicate of any program already on disk.

By skillfully combining the Copy command with other disk commands, you can rearrange your directory at will. For example, if the first program in your directory is Oldfirst, and the one you want to move there is Newfirst, here is the procedure to follow:

1. Use the Rename command to rename Oldfirst, using a temporary name like Temp1.
2. Use the Copy command to copy Temp1 as Oldfirst. This puts a properly named Oldfirst somewhere other than in the first directory position. At this point, the first position is still held by Temp1.
3. Use the Scratch command to eliminate Temp1 from the directory. This vacates the first directory position; it will be filled by the next directory entry added to the disk.
4. Rename Newfirst, using something like Temp2.
5. Copy Temp2 as Newfirst. This puts Newfirst in the first directory position, which was vacated when you scratched Temp1.
6. Scratch Temp2.

Here is the complete syntax for accomplishing the swap:

```
OPEN 15,8,15
PRINT#15,"RENAME0:TEMP1 = OLDFIRST"
PRINT#15,"COPY0:OLDFIRST = TEMP1"
PRINT#15,"SCRATCH0:TEMP1"
PRINT#15,"RENAME0:TEMP2 = NEWFIRST"
PRINT#15,"COPY0:NEWFIRST = TEMP2"
PRINT#15,"SCRATCH0:TEMP2"
CLOSE15
```

Don't forget that PRINT# must be entered as one word, with no embedded spaces.

If you use the DOS wedge or another utility that provides simplified commands, those commands can make your program-swapping even easier. If you plan a lot of swapping, you can write a simple program to do it.

Louis F. Sander
Pittsburgh, PA

\$2DD Disk Name Changer—This program, which you can use on any Commodore computer, lets you change the name of a disk without reformatting it or losing any files. Make absolutely certain you type it in correctly, since it modifies the directory header block, and program errors could corrupt the disk irreparably. Lines 200-210 are the ones that write to the disk, so you should check them with extraordinary care. Also, SP\$ in line 100 should contain exactly 16 spaces.

```
100 PRINT{"SHFT CLR} MAGIC DISKNAME CHANGER
    - LUKE MESTER{CRSR DN}:SP$="{16 SPACE
    s}"
110 PRINT"INSERT DISK TO BE CHANGED,"
120 PRINT"THEN PRESS 'D' TO CONTINUE."
130 GETA$:IFA$<>"D"THEN130
140 OPEN15,8,15,"I0":OPEN2,8,2,"#"
150 PRINT#15,"U1:2,0,18,0"
160 PRINT#15,"B-P:2,144"
170 FORJ=0TO15:GET#2,A$:D$=D$+A$:NEXT
175 PRINT{"CRSR DN}OLD NAME: ";D$:PRINT
180 INPUT"NEW NAME";DN$:IFDN$=""THENEND
190 DN$=LEFT$(DN$+SP$,16)
200 PRINT#15,"B-P:2,144":PRINT#2,DN$;
210 PRINT#15,"U2:2,0,18,0":CLOSE2
220 INPUT#15,A,B$:PRINTB$
230 PRINT#15,"I0":CLOSE15
```

Luke Mester
Colliers, WV

commodore

COMPUTER PRODUCTS AT... COMPUTER CREATIONS

Call TOLL FREE for Software Prices Not Listed!!!

ACCESS					
Beach Head 2 (D)	26	Pole Position 2 (D)	19	Zork I (D)	23
Mach 5 (R)	23	The Goonies	19	MICROPROSE	
Raid Moscow (D)	25	Zorro (D)	19	Acro Jet: Advanced	
ACTIVISION				Flight Simulator (D)	23
Game Maker	24	ELECTRONIC ARTS		Crusade Europe (D)	27
Great American		Moviemaker	24	Decision in Desert (D)	27
Cross Country		Europe Ablaze	36	F-15 Strike Eagle (D)	21
Road Race (D)	21	Heart of Africa	24	Gun Ship: The Helicopter	
Hacker (D)	21	Adventure Const.		Simulation (D)	Call
Master of the		Set (D)	28	Kennedy Approach (D)	23
Lamps (D)	21	Archon 2 (D)	24	Silent Service	
Slot Car Const.	24	Mail Order		Submarine	
AVALON HILL		Monsters (D)	24	Simulation (D)	23
Panzer Jagd (D)	19	Music Const. Set (D)	17	SPRINGBOARD	
Jupiter Mission 1999	23	Murder on the		Newsroom	34
Super Bowl	21	Zanderneut (D)	14	Clip Art Vol. 1	21
Sunday (D)		One-on-One (D)	24	MINDSCAPE	
Telengard (D)	19	Pinball Const. Set (D)	17	Bank St. Music	
Tournament Golf (D)	19	Racing Dest. Set (D)	24	Writer (D)	26
Batteries Included		Seven Cities Gold (D)	24	Halley Project (D)	26
Paperclip 64 or 128	41	Skyfox (D)	24	Perfect Score SAT (D)	49
Homepak	35	EPYX		ORIGIN	
Consultant 64 or 128	41	Ballblazer (D)	27	Ultima 3 (D)	39
BRODERBUND		Fast Load (R)	27	SSI	
Bank St. Writer (D)	33	Jet Combat		Battalion	
Champ Loderunner (D)	23	Simulator	19	Commander (D)	27
Karateka (D)	21	Rescue on		Colonial	
Mask of the Sun (D)	26	Fractalus (D)	27	Conquest (D)	27
Print Shop (D)	29	Summer Games 2 (D)	26	Computer Ambush (D)	39
Print Shop Graphics		Winter Games (D)	27	Computer DB (D)	27
Library #1 (D)	17	World's Greatest		Field of Fire (D)	27
Print Shop Graphics		Football (D)	27	Germany 1985 (D)	39
Library #2 (D)	17	FIRST STAR		Imperium	
Print Shop Graphics		Spy vs. Spy (D)	21	Galactica (D)	27
Library #3	17	HAYDEN		Kampfgruppe (D)	39
DATAFOOT		Sargon 2 (D)	15	Norway 1985 (D)	24
Alternate Reality (D)	28	Sargon 3 (D)	33	Phantasia (D)	27
Bruce Lee (D)	19	INFOCOM		SUBLOGIC	
Conan Barbarian (D)	19	Enchanter (D)	23	Fight Simulator 2 (D)	32
Elevator Action (D)	19	Hitchhiker's Guide to		TIMETWORKS	
Mr. Do (D)	17	the Galaxy (D)	23	Data Manager 2 (D)	33
		Infidel (D)	23	Swiftcalc/	
		Planetfall (D)	23	Sideways (D)	
		Sorcerer (D)	26	Wordwriter/Speller (D)	33
		Wishbringer (D)	23		

COLORED DISKS AS LOW AS 79¢ EACH

FLOPPY DISKS AS LOW AS 59¢ EACH

Fully guaranteed. Includes sleeves and hub rings.

DISKETTES (2 box minimum) 10 per box

5 1/4"	BLACK GENERIC BULK	COLORED GENERIC BULK		
BULK	SS/DD	DS/DD	SS/DD	DS/DD
20-69	.74 ea.	.99 ea.	.89 ea.	1.09 ea.
70+	.59 ea.	.85 ea.	.79 ea.	.99 ea.

5 1/4"	Black Generic	Color Generic	BASF	Maxell
Boxes (10)	SS/DD	SS/DD	SS/DD	SS/DD
2-6	8.90	10.90	10.90	16.90
7+	7.40	9.90	9.90	15.90

To order call TOLL FREE

1-800-824-7506

ORDER LINE ONLY

COMPUTER CREATIONS, Inc.

P.O. BOX 493 - DAYTON, OHIO 45459

For information, order inquiries, or for Ohio orders (513) 435-6868
Order Lines Open 9 a.m. to 9 p.m. Mon-Fri. 10 a.m. to 4 p.m. Sat. (Eastern Standard Time) Minimum \$15 per
order C.O.D. (add \$3.00). Please specify computer system. Call toll free number to verify prices and availability
of product. Prices and availability are subject to change without notice. We ship C.O.D. to Continental U.S.
addresses only! Please include 4% shipping on all Hardware orders (min \$4.00). Software and accessories add
\$3.00 shipping and handling in Continental U.S. Actual freight will be charged outside U.S. to include Canada,
Alaska, Hawaii, Puerto Rico and APO. Ohio residents add 6% sales tax. Canadian orders 5% shipping. (Min
\$5.00). All other foreign orders, please add 15% shipping. (Min \$10). For immediate delivery send cashier's
check, money order or direct bank transfers. Personal and company checks allow 3 weeks to clear. School
purchase orders welcome. Due to our low prices, all sales are final. NO CREDITS. All defective returns must
have a return authorization number. Please call (513) 435-6868 to obtain an RA# or your return will not be
accepted for replacement or repair.

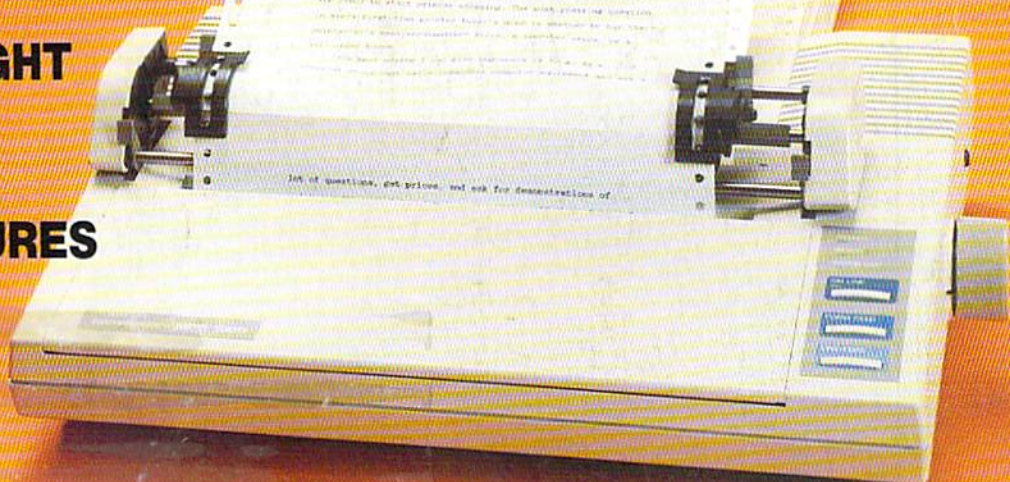
RUN

May 1986 A CWC/I Publication

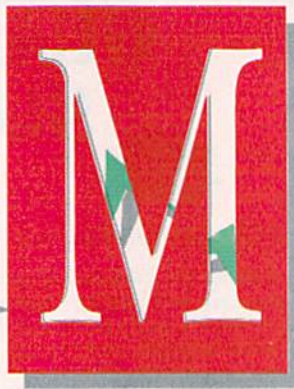
U.S.A. \$2.95
CANADA \$3.95

SPECIAL REPORT ON PRINTERS

- WHAT'S AVAILABLE
- CHOOSING THE RIGHT
PRINTER AND
INTERFACE
- MAXIMIZING FEATURES



MAGIC



Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun. MAGIC is doing what cannot be done.

Every month, Magic brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). RUN will pay up to \$50 for each trick accepted. Send your tricks to:

MAGIC
RUN Magazine
80 Pine St.
Peterborough, NH 03458

If you enclose a self-addressed stamped envelope, we'll send you a Trick Writer's Guide. Readers outside the United States may omit the stamp.

May's master magicians, microprocessing mightily, make manifold miracles: metronomes, machine code, mnemonics, miniature memory maps, monitors, modems, monographs. (Meatily, matchlessly magnificent, May's miraculous magicians!)

Message: Many men make magic.

Media magic maximizes minds. Media magic makes money. Mercenary? Minimally. Meritorious? Massively.

Moral: Magic manuscripts—mail 'em!

\$2DE Disk rescue tab—Has one of your disks ever warped after a lengthy period of use, making it difficult to remove from your drive? If it's a copy-protected master disk, the situation is very uncomfortable.

To remove a warped disk more easily, put the disk into your drive, making a mark where its top edge extends through the front of the cabinet. Remove the disk, locate the mark and place a label or piece of tape there, folded to form a protruding tab. You can then use the tab to extract the disk when it gets stuck. Such a tab also makes your disk more visible in its box, so it's easy to find when you need it.

Mike Rogalski
Pasadena, CA

\$2DF C-128 disk operations—Some of Basic 7.0's disk commands give trouble when you try to use them with string variables in their arguments. If you put your string

variables inside parentheses, your troubles should vanish like magic. Another good solution is to operate on the variables before using them. Any of these should work:

```
DOPEN#1,"FILENAME"  
DOPEN#1,(F$)  
DOPEN#1,"" + F$
```

Jerry W. Jarvis
Spokane, WA

\$2E0 C-128 mode switcher—When I replaced my trusty C-64 with a new C-128, it was difficult to keep track of which of my many disks were for C-64 mode and which were for Basic 7.0. I solved the problem by using the 1571's auto-boot feature to load and run this program for my C-64 disks.

```
100 REM SWITCH TO C-64 MODE  
110 SYS 65357
```

C. David Moran
Ridgefield, NJ

\$2E1 Testing for 128/64 mode—The following line tells a program whether it is running in C-64 mode or C-128 mode. It works because FRE(0) and FRE(1) on the 64 always return the same value; while in 128 mode, they return the amount of bytes free for program and variable storage, respectively. It's possible, but highly unlikely, for both to be equal in 128 mode. After the line is executed, variable M will contain a 128 or a 64, depending on the machine you're using.

```
100 M = 128 : IF FRE(0) = FRE(1) THEN M = 64
```

Edward Horgan
Coatesville, PA

\$2E2 C-128 RGBI connector—Be careful when making cables for this connector, because the pin diagram in the manual is incompletely labeled. Pin 1 is always at the end of the longer row, but it can be on your left or your right, depending on whether you're looking at the pin end or the solder-terminal end of the connector, and on whether your connector is female or male.

Before connecting any wires, you should carefully determine the location of pin 1, then mark it unmistakably. The other pins will then be easy to find, and your chance of error will be greatly reduced.

Most connectors have tiny pin numbers molded into the plastic, and checking them is the surest way to locate pin 1. You can also rely on this advice: If you are looking at the solder-terminal end of the connector, with the longer row of pins on top, pin 1 is on your right for a male connector and on your left for a female connector.

**Ron Hall
Duncan, OK**

\$2E3 Using C-128 windowing—If you set a two-inch window at the top of your C-128 or Plus/4 screen, you can improve your speed when typing in programs. Set the window, then rest your magazine on the front of the monitor, with its top edge just below the window's lowest line. Since your cursor will never go below the window, you can simultaneously see the magazine and your own typed material.

**Brad J. Taylor
Clarksville, TX**

\$2E4 C-128 Input prompt—To suppress the question mark, use POKE 21,64. Immediately following the Input statement, use POKE 21,0 to return the system to normal. If you don't make the second Poke, your system will operate erratically.

**Edward B. Sullivan
Branson, MO**

\$2E5 Viva VIC-20!—If you have an old VIC-20 and a new C-128, you can use them both at once. The VIC sits nicely on the 128's back shelf, and its video cable plugs into the front of the 1702. Keep everything plugged in, using the 1702's back panel switch to select the display you'd like to see. To ensure good air flow through both computers, you can raise the VIC slightly on some sort of improvised feet.

**Stanley Smith
Gladwin, MI**

\$2E6 Magic C-64 clock—This program is longer than our customary one-screen limit, but we think you'll be glad we printed it. It uses the seldom-used Time of Day clock to feed a continuous screen display. The TOD clock keeps much better time than TI\$, and it isn't affected by other computer operations.

Running the program will start the clock, and nothing short of turning off your computer will stop it. Resets and stop/restore presses will kill the display without affecting the timekeeping. To return the display to life, execute a SYS40822.

```
1000 PRINT "{SHIFT CLR}{2 CRSR DNs}MAGIC CLOCK
      - FLOYD ANDERSON - SYS40822"
```

10 / RUN MAY 1986

```
110 POKE55,118:POKE56,159:CLR
120 FORJ=0TO137:READK:L=L+K:NEXT:RESTORE:IF
    L<>11465THENPRINT"DATA ERROR":STOP
130 FORJ=0TO137:READK:POKE40822+J,K:NEXT
140 INPUT "{2 CRSR DNs}HR,MIN,SEC,AM/PM";H,M
    ,S,AS
150 IFH>12ORM>59ORS>59THEN140
160 IFH>9THENH=16+(H-10)
170 IFM>9THENM=16*VAL(LEFT$(STR$(M),2))+VAL
    (RIGHT$(STR$(M),1))
180 IFS>9THENS=16*VAL(LEFT$(STR$(S),2))+VAL
    (RIGHT$(STR$(S),1))
190 IFLEFT$(AS,1)="P"THENH=H+128
200 POKE56331,H:POKE56330,M:POKE56329,S:POK
    E56328,0:SYS40822:END
201 DATA 120,169,131,141,020,003,169
202 DATA 159,141,021,003,088,096,169
203 DATA 058,141,029,004,141,032,004
204 DATA 141,035,004,169,013,141,039
205 DATA 004,173,011,220,041,128,240
206 DATA 007,169,016,141,038,004,208
207 DATA 005,169,001,141,038,004,173
208 DATA 011,220,041,016,024,074,074
209 DATA 074,074,105,048,141,027,004
210 DATA 173,011,220,041,015,024,105
211 DATA 048,141,028,004,173,010,220
212 DATA 041,240,024,074,074,074,074
213 DATA 105,048,141,030,004,173,010
214 DATA 220,041,015,024,105,048,141
215 DATA 031,004,173,009,220,041,240
216 DATA 024,074,074,074,074,105,048
217 DATA 141,033,004,173,009,220,041
218 DATA 015,024,105,048,141,034,004
219 DATA 173,008,220,024,105,048,141
220 DATA 036,004,076,049,234
```

**Floyd L. Anderson, Jr.
Niantic, IL**

\$2E7 Modem hearing aid—Sometimes you make a modem call and fail to get a carrier. Since most modems don't let you listen in on the line, you can't tell if you're getting a busy signal, a ring with no answer or something else. Worse, modems with the auto-redial feature can be repeatedly answered by an angry human voice.

To hear what your modem is receiving, use a telephone pickup such as the Radio Shack #44-533, which you can plug into any handy amplifier. Move the pickup around on the telephone or modem until you get a useful signal.

Many portable tape recorders can act as amplifiers for this purpose, if you plug earphones into the earphone jack, put a blank tape in the recorder and press the play and record buttons. The pause button will often stop the tape, but not the amplification.

**Craig Edward Given
Chattanooga, TN**

\$2E8 Remembering power-up sequences—In our school, all children greet their Commodore by saying "My Dear Computer." This reminds them to turn on the monitor (My), then the disk drive (Dear) and, finally, the computer (Computer). When leaving the computer, they say "Computer, Don't Move." This, of course, reminds them to turn everything off in reverse order.

Continued on p. 90.

From p. 10.

A large bulletin board display reminds children of the mnemonic and assures safe powering procedures in our computer lab.

Elaine Buckshaw
Holbrook, NY

\$2E9 Line-editing tips—When changing Basic program lines, here are some things to keep in mind.

1. As long as the cursor is on the altered line when you press the return key, the line will be entered into the program. You needn't move the cursor to the end of the line.

2. You can duplicate a line in the program by listing it, typing a new line number over the old one, then pressing return. The new line number will be added to the program, and the old one will remain as it was.

3. Before you press the return key, you can easily discard your changes by pressing shifted return or by moving the cursor off the line in question. The line will remain in memory in its uncorrected state.

4. If you want to replace one line with another while retaining the option of restoring the original line, insert a REM statement in the original line, just after its number. Then give the replacement a line number that is a small offset of the original. You can later undo your work by removing the REM and deleting the second line.

5. If you want to move a group of lines from one program to another, load the first program and list the lines you want to move on the screen. Then, without disrupting the screen, load the second program, move the cursor to each of the listed lines and press the return key. The first program's lines will be added to the second program. If the line numbers interfere with those in the second program, you can change them before pressing the return key.

6. If you have a C-128, you can use its two-screen capability to make the above process even better. List the desired lines to the 80-column screen, then use ESC X to return to 40-column mode. The lines will stay on the 80-column screen no matter what you do with the program or the 40-column screen. To add them to your program at any time, use ESC X to move to 80-column mode, then put your cursor on each line you wish to move and press the return key.

J. C. Vollmer
Prior Lake, MN

\$2EA Keyboard lock/unlock—Sometimes, usually when garbage has been printed to the screen, the shifted Commodore key won't switch your computer between Text and Graphics modes. (Naturally this always happens when you're in the mode you don't want to be in.)

You can correct the situation by holding down the CTRL key and pressing I. This is equivalent to printing a CHR\$(9), the character that unlocks the mode switch. You can lock the mode as well, by pressing CTRL-H, which is the same as printing CHR\$(8).

Scott Duncan
Superior, NE

\$2EB C-64 screen blanking—When the C-64's screen is blanked, the border color temporarily covers the entire face of the monitor, and processing speed increases slightly. The real screen is still active and can be printed to or Peeked in the normal way. You can even use it for dynamic keyboard activities, and no observer will see what's going on.

To blank the screen, you can enter:

POKE 53265,PEEK(53265) AND 239

To return it to normal, just enter:

POKE 53265,PEEK(53265) OR 16

Location 53265 is also used to enable bit map graphics, extended background color mode and several other exotic modes. If your program doesn't use any of them, the Pokes become much simpler. To blank the screen, use:

POKE 53265,11

To return it to normal, use:

POKE 53265,27

Since very few programs use the exotic graphics modes, these simpler Pokes will almost always work.

Sue Dohnim
Apenna, ME

\$2EC C-64 text-color change—This has been needed for years. It instantaneously changes the color of all text already printed on the screen.

50 POKE 648,224 : POKE 53281,A : PRINT " {COLOR A}
{SHFT CLR} "

60 POKE 648,4 : POKE 53281,B : PRINT " {COLOR C} "

A is the Poke value for the color you want the text to become. Color A is that color's corresponding key; B is the Poke value for the screen color you want when the routine is finished; and C is the key for the text color you want active at that time.

The routine works with all known ROM versions and with the C-128 in C-64 mode. It resets the screen line links, which may occasionally cause minor troubles. The overall effect may be more pleasing if you blank the screen while the routine is being executed.

Louis F. Sander
Pittsburgh, PA

\$2ED Improving background color changes—Many C-64 programs let you select the background color of your screen. But when you change it to the character color, you cannot see the printed text. This subroutine avoids the problem, taking advantage of the fact that white letters show up well on all colors except white. When the subroutine is called, the background color advances by 1. The cursor color remains white, unless the background is white. In that case, the cursor turns black. When the background changes again, the cursor returns to white.

A demonstration routine is included to illustrate the system. When used in conjunction with the above text color change routine, this subroutine can ensure that preexisting text never becomes invisible.

```

30 REM BACKGROUND CHANGE DEMO ROUTINE
40 PRINT"PRESS A KEY TO CHANGE COLORS{CRSR
   DN}"
50 GETA$:IFA$=""THEN50
60 GOSUB110:REM CHANGE BKGD COLOR
70 POKE53281,BC:POKE646,CC:PRINT"BKGD";BC,"
   CHAR";CC
80 GOTO50
90:
100 REM BACKGROUND CHANGE SUBROUTINE
110 BC=PEEK(53281)AND15:CC=PEEK(646)
120 BC=(BC+1)AND15:CC=1AND(CC<>BC)
130 RETURN

```

Dee Plume
Nome, AK

\$2EE Filename extensions—Do you wonder why some people end filenames with a period and three letters? Music filenames, for example, commonly end in .MUS, while files for downloading often have names ending in .IMG, or something similar.

The practice is common in computers using disk operating systems like CPM and IBM's PC-DOS. Filenames in these operating systems are limited to eight characters, compared to Commodore's 16. In addition to its name, such a file can have an optional "extension" of up to three characters, separated from the filename by a period.

When the operating system lists such a file in a directory, it uses spaces to pad the filename to eight characters, then it prints another space and the extension. When searching for files, it treats the extensions as different from the filenames, so you can, for example, search for all files whose extension is BAS. This feature makes it useful to group similar files by giving them similar extensions, and this is the practice that is sometimes carried over into Commodore work.

But in Commodore's DOS, of course, there's no such thing as a separate extension. You can't search on it, and, because of the 16-character limit for filenames, you don't really need it. In fact, if you want to emulate such an extension, it's best to put it at the *beginning* of the filename, where it can be searched for by using the wild-card characters.

So, if you're tempted to tack a period and three letters onto the end of your filenames, try to resist the temptation. If you *can't* resist it, try putting them up front where you can use them.

Lucy S. Terrier
Alton, IL

Software Discounters of America

Orders Outside PA—1-800-225-7638

PA Orders — 1-800-223-7784

Customer Service 412-361-5291

Open Saturday

•Free Shipping on orders over \$100 in continental USA

•No surcharge for VISA/Mastercard

•Your card is not charged until we ship

ABACUS	Fast Load Partner (D)	\$23	Homework Helper	Call
Basic 128	Koronis Rift (D)	\$25	Monster Voyage (R)	\$9
Super C 128	Multiplan 64 or 128	\$39	Story Machine (R)	\$9
Super Pascal 128	Summer Games II (D)	\$25	SPRINGBOARD	
ACCESS	The Eidolon (D)	\$25	Graphics Expander for	
Beach Head 2 (D)	Winter Games (D)	\$25	Print Shop (D)	\$25
Leader Board Golf (D)	GAMESTAR		Newsroom (D)	\$33
Mach 5 (R)	On-Field Football (D)	\$19	N.R. Clip Art #1 (D)	\$19
Mach 128 (R)	Star-Rank Boxing (D)	\$19	N.R. Clip Art #2 (D)	\$25
ACCOLADE	HAYDEN		Stickers (D)	\$23
Dambusters (D)	Sargon 3 (D)	\$33	SSI	
Fight Night (D)	INFOCOM		Battalion	
Hardball (D)	Ballyhoo (D)	\$25	Commander (D)	\$25
PSI-5 Trading Co. (D)	Cut Throats (D)	\$23	Battle Group (D)	\$37
ACTIVISION	Enchanter (D)	\$23	Colonial	
Alter Ego-Male (D)	Hitchhiker's Guide to		Conquest (D)	\$25
Gary Kitchen's	the Galaxy (D)	\$23	Computer Ambush (D)	\$37
Gamemaker (D)	Invisiclus	Call	Computer QB (D)	\$25
Hacker (D)	Planetfall (D)	\$23	Field of Fire (D)	\$25
Road Race (D)	Spellbreaker (D)	\$29	Gemstone Warrior (D)	\$23
ARTWORX	Wishbringer (D)	\$23	Kampfgruppe (D)	\$37
Bridge 4.0 (D)	Zork 1 (D)	\$23	NAM (D)	\$25
International	Zork 2 or 3 (D)	\$25	Phantasie (D)	\$25
Hockey (D)	KOALA		Phantasie 2 (D)	\$25
Strip Poker (D)	Light Pen w/Painter (D)	\$35	Questron (D)	\$25
Data Disk #1 female	Muppet Learning		Rings of Zilfin (D)	\$25
Data Disk #2 male	Keys (D)	\$29.95	Wizards Crown (D)	\$25
Data Disk #3 female	Touch Tablet w/		SUBLOGIC	
AVOLON HILL	Painter (D)	\$39	Flight Simulator 2 (D)	\$32
Super Bowl	Koala Printer (D)	\$16	Jet (D)	\$29
Sunday (D)	LEARNING COMPANY		Scenery Disks	Call
S.B.S. Champs Disk	All Titles Available	Call	TIMWORKS	
Tournament Golf (D)	MASTERTRONIC		Data Manager 2 (D)	\$33
BATTERIES INCLUDED	5-A-Side Soccer (D)	\$9	Data Manager (128)	\$43
Consultant 64 or 128	The Slugger (D)	\$9	Evelyn Wood Dynamic	
Paperclip w/Spell	MICROLEAGUE		Reader (D)	\$33
64 or 128	Baseball (D)	\$25	Partner 128	\$39
BERKELEY	General Manager (D)	\$25	Sideways 64 or 128	\$19
SOFTWARES	1985 Team Disk	\$16	Swiftcalc	
Geos (D)	MINDSCAPE		Sideways (128)	\$43
BRODERBUND	Color Me: The Computer		Sylvia Porter's Personal	
Print Shop (D)	Coloring Kit (D)	\$19	Financial Planner (D)	\$39
P.S. Companion (D)	Halley Project (D)	\$19	Sylvia Porter's Personal	
P.S. Graphics Library	Lords of Midnight (D)	\$16	Fin. Planner 128	\$43
#1 128 or #3 (D)	Perfect Score SAT (D)	\$44	Wordwriter w/	
CARDCO	Quake Minus One (D)	\$16	85,000 Speller (D)	\$33
Freeze Frame (R)	Shadowfire (D)	\$16	Wordwriter w/85,000	
G-Wiz Pr. Interface	MISC.		Speller (128)	\$43
S'More (R)	Book of Adv. Games 2	\$16	TRONIX	
CBS	CSM 1541 Align. Kit (D)	\$29	S.A.M. (D)	\$39
Argos Expedition (D)	Copy 2 (D)	\$23	UNISON WORLD	
Dr. Seuss (D)	Firebird Elite (D)	\$19	Art Gallery 1 (D)	\$16
Ernie's Big Splash (D)	Gato (D)	\$19	Print Master (D)	\$23
Grover's Animal Adv. (D)	Karate Champ (D)	\$23	ACCESSORIES	
Mastering the SAT (D)	Kung Fu Master (D)	\$23	Bonus SS, DD	\$6.99 Bx
Math Mileage (D)	Snapshot 64 (R)	Call	Bonus DS, DD	\$7.99 Bx
Success w/Algebra	Spy vs. Spy 2 (D)	\$19	Compuserve Starter Kit	\$19
Success w/Math	Superbase 64 (D)	\$47	Datashare Printer	
Weather Tamers (D)	Superbase 128	\$59	Int. w/Graphics	\$33
DATASOFT	Superscript 128	\$47	Disk Case (Holds 50)	\$9
Alternate Reality (D)	Vizastar 128	Call	Disk Drive Cleaner	\$9
Bruce Lee (D)	Vizawrite 128	Call	Dow Jones News	
Never Ending Story (D)	ORIGIN		Retrieval Kit (5 hrs.)	\$14
The Goonies (D)	Ultima 3 (D)	\$34	Total Auto Answer/	
DAVIDSON	Ultima 4 (D)	\$39	Auto Dial Modem	
Math Blaster (D)	PROFESSIONAL		w/Software	\$24.88
Word Attack (D)	Fleet System 2		Sakata 13" Color	
ELECTRONIC ARTS	64 or 128	\$39	Composite Monitor	
Adv. Const. Set (D)	Fleet System 3 (128)	\$49	for C64 w/cable	\$149
Archon II: Adept (D)	SCARBOROUGH		Wico Bat Handle	\$17
Heart of Africa (D)	Build A Book (D)	\$17	Wico Boss	\$12
Movie Maker (D)	Mastertype (D)	\$23	Universal Printer Stand	\$16
Music Const. Set (D)	Net Worth (D)	\$44	MODEM OWNERS:	
One-on-One (D)	SIMON & SCHUSTER		Have you seen our on-	
Pinball Const. Set (D)	Great Int'l Airplane		line catalog of over 700	
Seven Cities Gold (D)	Construction Kit (D)	\$19	software titles for Com-	
Skyfox (D)	Star Trek-The Kobayashi		modore, Atari & Apple	
Super Boulder Dash (D)	Alternative (D)	\$26	Computers? It's on Com-	
Touchdown Football (D)	Typing Tutor 3 (D)	\$26	puserve's Electronic	
Prices too low to	SPINNAKER		Mail—Just type GO SDA	
advertise!!	Adventure Creator (R)	\$9	and shopping for soft-	
EPYX	Alphabet Zoo (R)	\$9	ware will never be the	
Fast Load (R)	Cosmic Combat (R)	\$9	same again!	

P.O. BOX 111327—DEPT. RN—BLAWNOX, PA 15238

*Ordering and Terms: Orders with cashier check or money order shipped immediately. Personal/company checks, allow 3 weeks clearance. No C.O.D.'s. Shipping: Continental U.S.A.—Orders under \$100 add \$3; free shipping on orders over \$100. PA residents add 6% sales tax. AK, HI, FPO-APO—add \$5 on all orders. Sorry—no International orders. Defective merchandise will be replaced with same merchandise. Other returns subject to a 15% restocking charge—NO CREDITS! Return must have authorization number (412) 361-5291. Prices subject to change without notice.

RUN
Establishes
Education SIG!

The Commodore C-128/C-64 Home Computing Guide

U.S.A. \$2.95
CANADA \$3.95

RUN

Font
California

June 1986 A CWC/I Publication



DESK TOP



calculator

THREE SUPER UTILITIES:

C-128 CHARACTER GENERATOR

QUICK MERGE 64

**C-64 EASY DISK-FILE
CONVERSION**

PLUS:

**IN SEARCH OF THE
PERFECT PRINTER, PART II**



GEOPRINT

OLD
C-64
GEOS



GEOS KERNAL



GEOWRITE



Also Inside: Special Section On Education





Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun. MAGIC is doing what cannot be done.

Every month, Magic brings you brief and useful computer tricks from around the world—tricks to make computing easier, more enjoyable or more exciting. We number our tricks in hex, the counting system of sorcerers and computerists.

Magic solicits your simple hardware ideas, short programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that can be implemented with a minimum of time, effort or theoretical knowledge and that is of current value to Commodore computerists (Plus/4 and C-16 owners, too). RUN will pay up to \$50 for each trick accepted. Send your tricks to:

MAGIC
RUN Magazine
80 Pine St.
Peterborough, NH 03458

If you enclose a self-addressed stamped envelope, we'll send you a Trick Writer's Guide. Readers outside the United States may omit the stamp.

June, the conventional wisdom says, signifies the start of a slow time for computing. But mark Magic's mighty mailbox; the truth is indeed the opposite—our summer mail is the heaviest of the year. So behold a surely proven truth: the Siren Song of Silicon transcends the Lure of the Great Outdoors.

What you see below was created while Winter held her icy grip, and while long, dark nights gave plenty of time to refine and polish the Magic. It's heavy in telecommunications and practical programs, plus the usual dose of amusements. As always, we know you'll enjoy it.

\$2EF File finder—This routine can be used to check for the presence of a given file on the disk and to determine whether the disk is write-protected. It's useful to make such checks before attempting to manipulate a potentially unavailable file.

If the file named Filename is not on the disk, line 130 will give an error 62, File Not Found. If the disk is write-protected, that line will give an error 26, Write Protect On.

If you don't need to check for write protection, replace the Open statement's A (for append) with an R (for read).

```
100 REM FILE FINDER - LOUIS F. SANDER
110 OPEN 2,8,2,"FILENAME,P,A":CLOSE 2
```

12 / RUN JUNE 1986

```
120 OPEN 15,8,15:INPUT#15,A,B$:CLOSE 15
130 IFA>1 THEN PRINT A,B$:END
140 PRINT "THE FILE IS ON THE DISK"
```

Louis F. Sander
Pittsburgh, PA

\$2F0 GET with flashing cursor—This routine provides a blinking cursor for the Get statement. It doesn't have the cursor footprint problems usually inherent in such routines, and it allows input from all keys, including the cursor, delete and color keys. The routine works as is on the VIC, C-64 and in both modes on the C-128.

```
1000 REM MAGIC GET W/CURSOR - ED HORGAN
1010 REM FOR C64,VIC,C128 IN BOTH MODES
1020 X=235:Y=236:IFFRE(0)=FRE(1) THEN X=214:Y=211
1030 Z=1024+PEEK(X)*40+PEEK(Y):ZZ=PEEK(Z)
1040 POKE Z,160:GETA$:POKE Z,ZZ:IFA$="" THEN 1040
1050 PRINT A$;:B$=B$+A$:IFA$=CHR$(13) THEN GOT 01070
1060 GOTO 1030
1070 PRINT B$;"REST OF PROGRAM GOES HERE"
```

Edward Horgan
Coatesville, PA

\$2F1 Datapointer for the C-64—This program sets up a machine language routine that can set the data pointer to any Data statement you choose, regardless of its line number. This eliminates the need for arrays to hold data the program already contains, letting you write smaller programs with faster execution and starting.

Once the machine language is in memory, load the Basic program containing the Data statements you need to access. To access the Nth Data statement in the program, just make the indicated Poke and SYS call, then execute a Read statement. You are limited to 255 Data statements, if you consider that a limit.

Datapointer accesses statements rather than individual data items, but once a statement has been accessed, your program can read all the items it contains. Data statements can, of course, stand by themselves or be embedded within multi-statement lines. It's fastest to put them at the beginning of your program.

```
100 PRINT "{SHFT CLR}MAGIC C64 DATAPOINTER - EDWARD G. BELL"
```


Listing continued.

```
110 FORJ=1TO82:READK:CS=CS+K:NEXT:RESTORE:I
    FCS<>11053THENPRINT"DATA ERROR":END
120 FORJ=679TO760:READK:POKEJ,K:NEXT
130 PRINT"(CRSR DN)TO GET NEXT DATA FROM TH
    E NTH STATEMENT,"
140 PRINT"READ IT AFTER POKE254,N:SYS679"
141 DATA169,000,133,251,169,008,133,252
142 DATA160,005,162,001,177,251,201,131
143 DATA240,014,032,230,002,201,032,240
144 DATA243,201,058,240,239,024,144,015
145 DATA228,254,208,007,132,065,165,252
146 DATA133,066,096,232,032,230,002,177
147 DATA251,032,230,002,201,058,240,212
148 DATA201,000,240,009,076,214,002,200
149 DATA208,002,230,252,096,152,024,105
150 DATA004,144,003,024,230,252,168,024
151 DATA144,186
```

Edward G. Bell
Swissvale, PA

```
140 PRINT"(CRSR DN)POKE 989,INDENTATION(2 S
    PACES)(NOW";PEEK(989));"(CRSR LF))"
150 PRINT"(CRSR DN)POKE807,3 ENABLES, STOP/
    RESTORE KILLS."
151 DATA173,038,003,141,238,003,173,039
152 DATA003,141,239,003,096,072,201,013
153 DATA240,033,169,064,197,252,208,021
154 DATA169,013,032,237,003,132,253,160
155 DATA004,132,252,169,032,032,237,003
156 DATA136,208,250,164,253,230,252,104
157 DATA076,000,000,169,255,133,252,208
158 DATA244
```

James F. Lees
Dayton, OH

\$2F2 C-64 line counter—This relocatable program for the C-64 and VIC gives an accurate count of the lines in any Basic program. It is useful, among other things, for determining how many lines to list on each page of a printout. To use the line counter, load and run it, taking careful note of the SYS command on the screen. Then load the program whose lines are to be counted and execute the SYS.

```
100 PRINT"(SHFT CLR)MAGIC LINE COUNTER - JA
    MES PELLECHI"
110 SA=828:PRINT"(CRSR DN)SYS";SA;"TO COUNT
    ":REM RELOCATABLE!
120 FORJ=0TO41:READK:CS=CS+K:NEXT:RESTORE:I
    FCS<>7462THENPRINT"DATA ERROR":STOP
130 FORJ=0TO41:READK:POKESA+J,K:NEXT
140 DATA165,043,133,251,165,044,133,252
150 DATA160,000,132,253,132,254,177,251
160 DATA170,200,177,251,240,013,230,253
170 DATA208,002,230,254,134,251,133,252
180 DATA136,240,235,165,254,166,253,076
190 DATA205,189
200 REM ABOVE IS FOR C-64. FOR VIC-20, ADD
    LINE 210 POKESA+41,221
```

James Pellechi
Middle Island, NY

\$2F3 Printer-width fix—This C-64 and VIC-20 program lets you print program listings in any desired width. With it, you can use any size paper for your listings, or you can leave wide right margins for comments.

The first printed line of any program line is flush with the left margin, while succeeding lines are indented any number of spaces you choose. Default values are 64 column listings, with four-space indentation of unnumbered lines. They can be changed by Poking as indicated in the program.

To use the program, run it, load the program to be listed, then Poke 807,3. Simultaneously pressing the run/stop and restore keys will disable the special listing mode.

```
100 PRINT"(SHFT CLR)MAGIC PRINTER WIDTH FIX
    - JAMES F. LEES":REM C64 & VIC
110 FORJ=1TO57:READK:CS=CS+K:NEXT:RESTORE:I
    FCS<>7554THENPRINT"DATA ERROR":STOP
120 FORJ=957TO1013:READK:POKEJ,K:NEXT:SYS95
    7
130 PRINT"(CRSR DN)POKE 976,PRINT WIDTH(2 S
    PACES)(NOW";PEEK(976));"(CRSR LF))"
14 / RUN JUNE 1986
```

\$2F4 Tempo and the metronome—While the tones in computer music are usually faithful to the composer's intent, there's often something wrong with the music's speed, or tempo. There's no need for such a discrepancy, because the proper tempo is always specified on the sheet music by an Italian word such as Largo, Andante or Allegro. Musicians know the meanings of these words, but, unfortunately, computers don't.

Luckily, much sheet music also includes a numerical metronome setting that the computer can easily digest. The setting is found at the start of the piece, usually in the form:

M.M. [note] = [number]

The M.M. stands for Maelzel's Metronome. (Maelzel developed the first one in the early 19th century.) The [note] will be the symbol for the note, usually a quarter note or half note, which is counted as one beat in the time signature of the piece. The [number] signifies the number of beats per minute, often somewhere between 60 and 80, but with a practical range of about 50-120.

When you establish the tempo for your computer music, just be sure there are the appropriate number of notes per minute of music played.

On the C-128, the Tempo statement can be used for this, if you know the following formulas:

TEMPO = beats per minute / note value / 3.12

beats per minute = TEMPO × note value × 3.12

TEMPO is the appropriate argument for the Tempo statement, while note value is 1 for a whole note, 2 for a half note, 4 for a quarter note, and so on. The note value and number of beats per minute are, of course, taken from the metronome setting.

While the Tempo statement takes arguments from 1-255, only those in the lowest part of that range are useful in making music. Using a quarter note for one beat, Tempos from four to ten cover the range of 49 to 124 beats per minute. Using a half note for one beat, Tempos from 8-20 cover the same range.

Jean Patterson
Pittsburgh, PA

\$2F5 C-128 error trapping—When programming the C-128, add the following three lines, numbered exactly as shown. If your program encounters an error, these lines will tell you what kind it is and where it is. The offending line will even be listed to the screen.


```

0 TRAP63999:REM MAGIC - A.OZERKOVSKY
63998 PRINT"THE PROGRAM IS OK!":END
63999 PRINTERR$(ER);" ERROR IN LINE";EL:HEL
P

```

Alejandro Ozerkovsky
Mexico City
Mexico

\$2F6 C-128 terminal program—This little gem demonstrates the power and flexibility of the mighty C-128. Where else can you find a terminal program that fits on a single line?

```

10 REM MAGIC C128 TERMINAL - J.PAYNE
20 POKE56577,0:POKE56579,38:OPEN1,2,3,CHR$(
6)+CHR$(0):DO:GETA$:GET#1,B$:IFAS<>"THE
NPRINT#1,A$;:LOOP:ELSEIFB$<>"THENPRINTB
$;:LOOP:ELSELOOP

```

Jim Payne
Dover, DE

\$2F7 C-128 function keys—This bit of magic lets you redefine the C-128's help key and shifted run/stop keys, as long as you run it before any of the function keys have been redefined. If you want the new definition to include a carriage return, use the left-arrow key where you want the return to appear.

If you know how the function keys are set up in memory, you can modify the program to accommodate your creative wishes. Locations 4096-4351 are reserved for the function keys. Locations 4096-4105 hold the lengths of each key definition, from f1 through f8, then shifted run/stop, then help. The definitions themselves are stored from 4106-4351.

Basic's Key command manages the first eight definitions, while a program such as this can manage the ninth and tenth.

You can save the setups for all ten keys by using

BSAVE "filename", P4096 TO P4351

They can be reloaded at any time by

BLOAD "filename"

```

10 PRINT"(SHFT CLR)MAGIC EXTRA C128 F-KEYS
- GARY KEMPER"
20 INPUT"(CRSR DN)RUN/STOP KEY DEFINITION";
R$
30 INPUT"(CRSR DN){4 SPACES}HELP KEY DEFINI
TION";H$
40 POKE4104,LEN(R$):POKE4105,LEN(H$)
50 FORJ=1TOLEN(H$+R$)
60 B=ASC(MID$(R$+H$,J,1))
70 IFB=95THENB=13
80 POKE4158+J,B
90 NEXT

```

Gary Kemper
Azusa, CA

\$2F8 Halley's Comet revisited—If you missed the prime viewing period for our once-in-a-lifetime visitor, this C-64 program can show you what you missed. It gives a computer-enhanced image of the famous heavenly body, complete with color and sound.

```

10 PRINT"(SHFT CLR){CTRL 2}HALLEY'S COMET -
TAMMY SILVERBERG/MAGIC"

```

16 / RUN JUNE 1986

```

20 POKE53281,0:FORJ=1TO52:PRINTTAB(5)"{6 SP
ACES}*{6 SPACES}*{3 SPACES}";:NEXT:PRINT
"{HOME}"
30 S=54272:FORJ=0TO24:POKE+S,J,0:NEXT:POKE+S
+24,15:POKE+S+1,1:POKE+S+5,220
40 V=53248:FORJ=0TO62:READK:POKE832+J,K:NEX
T:POKE2040,13:POKEV+21,1:POKEV+28,1
50 POKEV+37,7:POKEV+38,2:POKEV+39,8:POKE+S
+4,129
60 FORX=1TO55STEP.5:POKEV+1,255-X:POKEV,X:
NEXT
61 DATA 000,000,252,000,015,255,000,015
62 DATA 255,000,063,255,000,063,255,000
63 DATA 063,255,000,247,255,000,223,252
64 DATA 000,125,124,000,117,240,001,095
65 DATA 192,001,093,000,001,084,000,005
66 DATA 080,000,006,064,000,022,064,000
67 DATA 170,000,000,168,000,000,160,000
68 DATA 000,000,000,000,000,000,000,000

```

Tammy Silverberg
Brooklyn, NY

\$2F9 Super-simple scheduling program—I'm in charge of scheduling and reservations for our Lions Club hall. I used a paper calendar for six months, but with all the reservations, cancellations and conflicts, I decided to put my computer to use. I started by writing a Basic program using Data statements. However, with our very heavy schedule, the program became monstrous and time-consuming.

I finally came up with a program that contains only one executable line and operates in real time. I don't know that it is unique, but in my computer-conscious small community, no one has ever seen the like.

The secret is to use one line for each day, with the line number consisting of a 1 followed by the month and day in four-digit form. The line number for June 8 would be 10608; for Halloween, it would be 11031; and so on. After some dates have been scheduled, the program might look like this:

```

10 LIST 10000 -
10112 BINGO TONIGHT
10113 SWIM PARTY AT 8:00
10114 LUNCHEON

```

and so on, with up to 80 characters per line.

The beauty of the program is that lines are never executed, so they needn't be syntactically correct. To access the lines, you simply load and run the program. You can make monthly or quarterly printouts by listing to the printer. If all your information won't fit on one line, end the line with SEE xxxxx, where xxxxx is an unused line number above 20000. After a date has passed, you may delete it by typing its line number; you can then save the file by using the Save with Replace command.

If you adopt this system for your own purposes, be careful not to use question marks in your entries, since the computer will convert them to Print statements. Also, to guard against reserving the same date twice, always list the program before making a new entry.

John T. McClennan
Point Arena, CA

RUN

July 1986 A CWC/I Publication

COMMODORE'S NEW C-64 FAMILY:

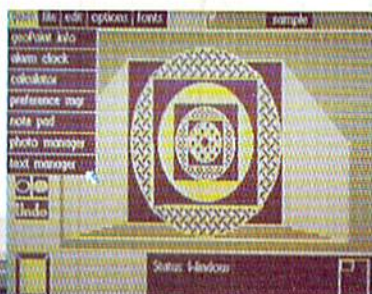
—SLEEKER
—FASTER
—EASIER-TO-USE



RAM EXPANDERS—
GIVE YOUR C-128 A BIG BOOST!

SPECIAL FOCUS ON GRAPHICS—
AMAZING DISPLAYS
FOR YOUR COMMODORE

ELECTRONIC PUBLISHING—
CREATE YOUR OWN
NEWSLETTER ON DISK



PLUS: HI-RES WRITER
A LIVELY C-64 MIX OF TEXT AND GRAPHICS





Hints and tips for Commodore users

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Pine St.
Peterborough, NH 03458

Beginning with the August issue, if your trick is accepted for publication in the column, you will receive a colorful RUN Magic T-shirt.

July conjures up images of fireworks, backyard barbecues and a cool dip in the lake. Well, this month's collection of jewels contains none of that, but it does promise you some refreshing and useful information for a midsummer's night. We present an enchanting assortment of gems—for the electronic handyman, the modem and BBS user, C-128 owners and computerists of all ability levels and persuasions. Try them out and add them to your repertoire.

\$2FA C-128 window work—If a window is established, all normal printing takes place inside it. But you can print outside the window by Poking to location 235, as shown by this little program.

```
100 PRINT"(SHFT CLR)C-128 WINDOW DEMO - E.
    DAM RAVN"
110 WINDOW 0,10,39,20
120 PRINT"INSIDE THE WINDOW":GOSUB180
130 POKE235,1:PRINT
140 PRINT"OUTSIDE THE WINDOW!":GOSUB180
150 POKE235,1:PRINT
160 FORJ=1TO20:PRINT"INSIDE AGAIN!":NEXT
170 END
180 PRINT"PRESS A KEY!":GETKEY$:RETURN
```

E. Dam Ravn
Olstykke, Denmark

\$2FB Musical staff maker—This program prints eight sets of musical staff lines on a standard sheet of paper. My daughter uses it for music class, and I use it for planning computer music. Making your music paper is much less expensive than buying it, and it's a lot more fun.

```
100 REM MAGIC MUSICAL STAFF - M.L.OAKES
110 OPEN4,4:PRINT#4:PRINT#4:PRINT#4
120 FORJ=1TO79:A$=A$+CHR$(164):NEXT
130 FORK=1TO8
140 FORL=1TO5:PRINT#4,A$:NEXTL
150 PRINT#4:PRINT#4
160 NEXTK
170 CLOSE4
```

Melvin L. Oakes
Louisville, KY

\$2FC Modem improvement—I'm pleased with my Commodore 1670 modem and its 1200-baud operation, but there's one annoying problem—it doesn't have an on-off switch. If the computer is on, the modem will answer any incoming calls, sending the carrier tone right into the caller's ear.

One solution is to get a ringer silencer from Radio Shack (#43-127). You install it in the line to the modem, and it can disable the modem from answering incoming calls.

Mark Hodge
Louisville, KY

\$2FD Turbodial—Auto-dial modem owners know how agonizingly slow the auto-dial process is, especially when using pulse dialing. If your telephone has speed dialing, however, you can speed up the process immensely. (Speed dialing lets you dial commonly called numbers by dialing one or two digits.) Just establish your QuantumLink or BBS number as one of your speed dialing numbers, then set your terminal program to call it. Now that your computer has only one or two digits to dial, things like dialing and redialing will proceed more rapidly.

Craig Edward Given
Chattanooga, TN

\$2FE Summertime magician—This C-64 audiovisual spectacular shows a miracle worker in full flower. There are no bugs in the program, but there is a CHR\$(66) that you'll only see when you run it.

```
10 PRINT"{SHFT CLR}{CTRL 2}SUMMERTIME MAGIC
   IAN - BOB & DAVID SNADER
15 S=54296:V=53248
20 FORJ=832TO959:READK:POKEJ,K:NEXT
25 FORJ=0TO7:READK,L:POKEV+K,L:NEXT
30 S=54296:V=53248:FORJ=0TO255:POKEV,J
35 POKES,5:POKE2040,B:POKES,0
40 IFB=14THENB=13:GOTO35
45 B=14:NEXT
50 DATA 000,240,000,003,252,000,003,255
51 DATA 000,003,255,001,000,255,004,000
52 DATA 255,016,000,063,016,000,063,004
53 DATA 001,143,028,073,153,093,025,153
54 DATA 085,009,153,085,001,153,020,000
55 DATA 145,000,000,004,064,000,001,016
56 DATA 000,004,064,000,017,000,000,000
57 DATA 000,000,000,000,000,000,000,000
60 DATA 000,000,000,000,000,000,000,000
61 DATA 000,000,000,001,000,000,004,000
62 DATA 000,016,000,000,016,000,000,004
63 DATA 003,255,028,075,252,093,025,249
64 DATA 085,009,153,085,001,153,020,000
65 DATA 145,000,000,004,064,000,001,016
66 DATA 000,004,064,000,017,000,000,000
67 DATA 000,000,000,000,000,000,000,000
70 DATA 032,005,033,014,037,000,038,015
71 DATA 039,007,021,001,028,001,001,108
```

Bob Snader & David Snader
Baltimore, MD

\$2FF Password maker—Our bulletin board needed passwords that were unique and easy to remember. We wrote the accompanying program to create easily pronounceable, eight-letter passwords. If you need a printout, you can alter the program to accomplish this.

The words are far from English, but they could easily have come from a tribal tropical paradise. Some consonants were omitted from B\$ to make the words easier to pronounce.

```
100 PRINT"{SHFT CLR} MAGIC PASSWORDS - BUCK
   SOMMERKAMP{CRSR DN}"
110 A$="AEIOU":B$="BCDFGHKLMNPRSTWZ":PW$=""
   :K=RND(-TI)
120 FORJ=1TO4
130 K=INT(5*RND(1)+1):V$=MID$(A$,K,1)
140 L=INT(16*RND(1)+1):C$=MID$(B$,L,1)
150 PW$=PW$+C$+V$
160 NEXT
170 PRINTPW$,
180 GOTO110
```

Buck Sommerkamp
Warrensburg, MO

\$300 Jotto answers—A guessing game named Jotto appears on p. 145 of my *Commodore 64 User's Guide*. If you're like me, that was one of your first programs. The accompanying lines, an accessory to that program, will show 10 / RUN JULY 1986

you all the right answers. Just add them to the original unchanged Jotto, then save the combined program under some appropriate name.

```
10 PRINT"{SHFT CLR}JOTTO ANSWERS - CARL E.
   MADSEN{CRSR DN}"
20 FORJ=1TO50:READA$
30 FORK=1TO5
40 T$(K)=MID$(A$,K,1)
50 JK=ASC(T$(K)):JK=JK-1
60 PRINTCHR$(JK);
70 NEXTK
80 PRINT
90 NEXTJ
```

Carl E. Madsen
Bayard, IA

\$301 C-128 Sweeper—You can have some fun with this program, Sweeper, which I first wrote for the Timex-Sinclair ZX-81. It works even better on the C-128, with its CHAR and Color commands. Try your own sounds in the program, and try fitting your own words to the sounds.

```
10 PRINT"{SHFT CLR} MAGIC SWEEPER C-128 - B
   .BUSH
20 A=INT(RND(1)*16+1):IFA=2THEN20
30 B=INT(RND(1)*6+1)
40 IFB=1THENAS$=" WHO?":B$=" >-YOU! "
50 IFB=2THENAS$=" WHAT?":B$=" {LEFT ARROW}GE
   T OUT! "
60 IFB=3THENAS$=" WHY?":B$=" <-BECAUSE "
70 IFB=4THENAS$=" IT'S ME!":B$=" (-GO!! "
80 IFB=5THENAS$=" .AW":B$=" )-BEGONE "
90 IFB=6THENAS$=" ME?":B$=" YES, YOU! "
100 COLOR0,2:COLOR5,A:COLOR4,7
110 FORJ=1TOA+10
120 CHAR1,J,A,A$:SOUND3,10500*B,2,1,1000*(J
   +A+B),6000,0,3000
130 NEXTJ
140 FORJ=30TO(2*B)STEP-1
150 CHAR1,J,A,B$:SOUND3,800*(A+J),2,,J,100*
   (J+A),3,50*(J+A)
160 NEXTJ
170 GOTO20
```

Bernard Bush
Address unknown

\$302 C-128 Perfect Typist fix—To keep the SYS addresses on screen for this vital RUN program, insert the following in line 60, between the Print statement and the SYS5120.

:WINDOW 0,4,79,23:

J. C. Vollmer
Prior Lake, MN

\$303 C-128 CP/M screen color—You can change the screen color when in CP/M mode by holding down the control key and one of the number keys on the keypad (not the number keys on the top row); CTRL 2 = white, CTRL 3 = red, and so on.

Michael L. Knapp
Omaha, NE

Continued on p. 78.

From p. 10.

\$304 C-128 abbreviation—If you've been using P (shift) O as the abbreviation for the Poke command on your C-64 or 128 in 64 mode, then beware! In 128 mode, you must use PO (shift) K.

Mark Porter
Montpelier, VT

\$305 C-128 flasher—In 80-column mode, you can draw attention to any Print statement by adding a CHR\$(15) between the Print statement and the quotation mark.

Dale L. Moore
Dimondale, MI

\$306 Toolkit tip—A useful tool not usually found in the electronic toolbox is the jeweler's saw, available in most craft shops. This is something like the more familiar coping saw, except it has a finer blade and will cut metal. It can be used to modify connectors or cut circuit boards, and it's particularly well suited for cutting off small screws and bolts. I recently used mine to cut a shoulder off a dongle so it would fit my new C-128.

Daniel Morris
Waynesburg, PA

\$307 Electronics repair—Many failures in the computer, disk drive and associated equipment can be attributed to IC chips failing when subjected to heat. A quick and fairly reliable way to find the culprit is to operate the equipment until the failure occurs, then to spray each chip with component coolant such as Radio Shack #64-2321. Chances are good that when you spray the faulty chip, the machine will resume operation.

Since the chips used in the C-64 and 1541 are now readily available, this technique could save you plenty of time and money.

Joe Grossinger
El Paso, TX

\$308 Easier disk commands—Not everyone is aware of this easy way of sending disk commands. Instead of something like

OPEN 15,8,15 : PRINT#15,"N0:NAME,ID"

it's possible to use

OPEN 15,8,15,"N0:NAME,ID"

This works because the Open command's syntax allows text to be included after the secondary address, as long as it is separated from the address by a comma. In a slightly different way, you can use

OPEN 4,4 : CMD4,"PROGRAM NAME" : LIST

to get labels on your printed program listings.

Hillmon W. Ancrum
Orangeburg, SC

\$309 Active device finder—Memory location 186 always holds the number of the last device used for input or output, and it's a very useful location to use in programming. (174 is the equivalent location for the Plus/4 and C-16.) If you type PEEK 186 before performing any further input or output, the screen will display the number of the device from which the program was loaded. You can use this information instead of asking the user about disk or tape.

Be careful, though—after you use the printer, this location will contain a 4 until more disk or tape input/output takes place.

Brian Petroski
Iron River, MI

\$30A Printer interface hazard—Most printer interfaces plug into the cassette port for power, leaving their own exposed contacts for connecting the Datassette. This is dangerous, since metal objects can easily touch the exposed contacts, with potentially disastrous results.

You can eliminate the hazard by changing the plug or the socket. If you don't use a Datassette, you can replace the special interface connector with a standard six-position PC edge connector and insulate its smaller exposed contacts with epoxy or other potting material.

As an alternative, you can mount a separate single-conductor connector on the back of your computer, con-

Circle 193 on Reader Service card.

YARD SALE
611 MAIN

MAKE SIGNS

BROWN FAMILY
REUNION
HERE!

Reduction of actual signs.

The BANNER MACHINE

Signs for many purposes:

- advertise sale items
- give directions
- make announcements
- publicize events
- enhance special occasions
- point out yard & garage sales

Print large, professional quality signs. Eight sizes of letters, plus graphic symbols, 4 fonts (letter styles) and 15 textured backgrounds included! Signs can be any length! Extra font disks available.

THE BANNER MACHINE	\$49.95
FONT DISKS (4 fonts)	\$39.95 ea.

Cardinal Software 14840 Build America Dr., Woodbridge, VA 22191 Info: (703) 491-6494 • In Canada: Applin Micro 1283 Pharmacy Ave., Scarborough, Ont. M1R 2J1 (614) 444-6909 ORDER TOLL FREE 10-6 MON-SAT

800-762-5645

necting it internally to the +5-volt power bus. Radio Shack #274-721 and the mating #274-725 will do the job for under \$2.

If disaster strikes before you take these safety steps, you may not have to take your computer in for service. Examine the fuse on the inside of your computer. If it's blown, replace it with a fuse of equal value and pray that nothing else went up in smoke.

Steven J. Walsh
Seaford, NY

\$30B Computer desk—I used a door to make a computer desk. The door sits on two small filing cabinets, but I could easily have used sawhorses or bookshelves. The door-desk is quite large and can easily hold all my computer equipment. An added attraction is that all cables and cords pass neatly through the hole for the lock.

If you don't have any old doors hanging around, you can buy new ones at building supply stores, usually for under \$20.

Nigel Horscroft
St. Lucia
West Indies

\$30C Blitzing Blitz!—The popular Blitz! compiler executes Goto statements much more quickly than For... Next loops. So you can speed up your Blitzed programs by changing lines like

```
100 FOR J=1 TO 10
110 Other program lines
120 NEXT J
```

to lines like

```
100 J=0
105 J=J+1
110 Other program lines
120 IF J<10 THEN 105
```

Mike Dryja
Washington, MI

\$30D KoalaPainter to Print Shop—This bit of magic will change KoalaPainter picture files into Print Shop Screen Magic picture files. Enter your machine language monitor, then type these commands:

```
.L " [COMD 1]PICtr filename",08
.T 6000 7F3F 4000
.S "filename",08,4000,5F3F
```

In the first line, [COMD 1] stands for the Commodore key and the 1 key pressed simultaneously, and ltr stands for any letter between A and O. The filename stands for the name of your KoalaPainter file. There must be fifteen characters between the quotes, including spaces. If your filename isn't long enough, pad it out with spaces.

Your monitor may have slightly different commands from those shown here. Use the necessary syntax to load a file, transfer memory and save the transferred block.

Brian Dressel
Spring Lake, MI

NEW VERSION 3.0
FOR C64 & C128
IN 128 MODE.

WIBBOB THE MIRROR WIBBOB DISK COPIER

\$24.95

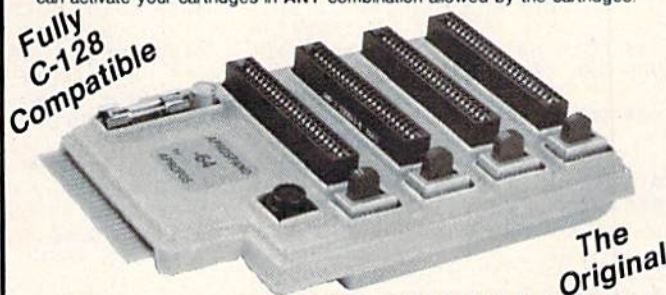
NO FINER OR MORE ADVANCED ARCHIVAL COPIER AVAILABLE AT ANY PRICE.
EASY TO USE. DOES NOT CAUSE DRIVE HEAD TO KNOCK.
COPIES UP TO 41 TRACKS.
PERIODIC UPDATE POLICY.
AUTOMATICALLY MAKES BACK-UP COPIES FROM VIRTUALLY ALL PROTECTED SOFTWARE.
NIBBLES, HALF TRACKS, COPIES EXTRA SECTORS AND EXTRA TRACKS.
REPRODUCES ALL DISK ERRORS AUTOMATICALLY.
FAST. COPIES FULL DISK IN AS LITTLE AS 4-7 MINS. EVEN COPIES ITSELF.

WE COPY MORE!
MASTERCARD, VISA, M.O. OR CHECK OK
+ \$3 SHIPPING & HANDLING
C.O.D. OR FOREIGN ORDERS ADD \$2
CALIF. ORDERS ADD 6% SALES TAX
— WRITE OR CALL —

Compumed
(408) 758-2436
P.O. BOX 6939
SALINAS, CA 93912
FOR COMMODORE 64 AND 1541 DRIVE
OR COMMODORE 128 AND 1571 DRIVE




APROSPAND-64™ Gives your Commodore 64 or 128 full expandability! This superbly designed expansion module plugs into the expansion port & gives you 4 switchable (singly or in any combination) expansion connectors - plus fuse protection - plus a reset button! Before you buy an expander, be sure that it has a fuse to protect your computer and that you can activate your cartridges in ANY combination allowed by the cartridges.



NOW ONLY \$29.95

Commodore Interfaces and Cables

Cardprint G-WIZ Printer Interface #1108.....	\$46.95
Cardprint B (without Graphics) #1105.....	\$35.95
Amiga Printer Cable (6 ft) #3040-6MM.....	\$17.95
Amiga Printer Cable (10 ft) #3040-10MM.....	\$21.95
Commodore 6 Pin Serial Cable (5 ft) #3006-5MM....	\$ 9.95
Commodore 6 Pin Serial Cable (8 ft) #3006-8MM....	\$12.95
Add Shipping Per Item: \$3.00 Cont. U.S. \$6.00 CAN, PR, HI, AK, APO, UPS Blue	
APROTEK Daisy 1120, 20 CPS Daisy Wheel.....	\$319.95
Elite 5CD, 10 CPS Daisy Wheel Printer	
Commodore Direct Connect + Parallel.....	\$184.95
Add Shipping Per Item: \$10.00 Cont. U.S. \$22.00 CAN, PR, HI, AK, APO, UPS Blue	

All Products have 2 Week Satisfaction or Money Back Guarantee

TECHNICAL INFORMATION (805) 987-2454

CALL TOLL FREE TO ORDER: (800) 962-5800 US

or (800) 962-3800 CA

CA Res. Add 6% Tax. Listed are cash prices. VS & MC Add 3%
APROTEK 1071-A Avenida Acaso, Camarillo, CA 93010

WIN BIG!
In RUN's Giveaway
Sweepstakes
CONTEST DETAILS INSIDE

R U N

August 1986 A CWC/I Publication

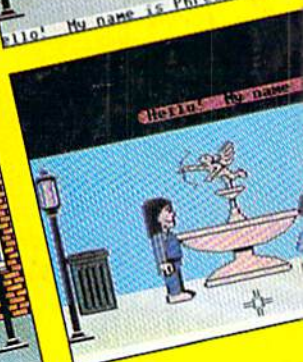
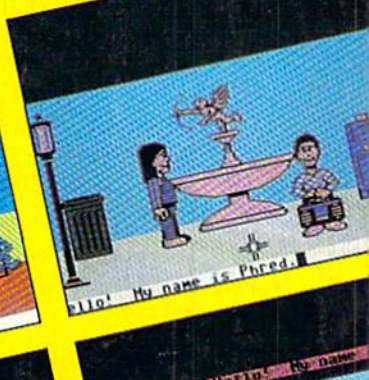
LUCASFILM STARS ON QUANTUMLINK

EXPERIENCE THE ACTION
AND ADVENTURE ON-LINE
WITH YOUR COMMODORE

SOFTWARE TO IMPROVE
YOUR CAREER

ORGANIZING YOUR C-64 DISKS
IS A SNAP WITH DISK KEEPER!

BOOTMAKER 128/64—
A Quicker Way to Run Programs





Hints and tips for Commodore users

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Pine St.
Peterborough, NH 03458

Beginning with the August issue, if your trick is accepted for publication in the column, you will receive a colorful RUN Magic T-shirt.

From the end of the world to your town come fantastic tricks to captain your Commodore. Your screen flickers, flashes and sparkles, rivaling nature's August light shows, and music gallops on hot trade winds. A gray-brown mouse scampers across your desk, masquerading as a joystick. Salvation, elevation, gyration and admiration make up the magical summer playground.

\$30E Commodore 1350 mighty mouse joystick—The only programs designed so far for the Commodore's new mouse are the Jane series of applications software. But don't fret! The rapid rodent performs quite capably as a joystick (the left button acts as a fire-button) on several C-64 favorites such as Doodle!, Micro Illustrator, the Graphic Editor in The Print Shop and even on GEOS.

It may take a while to become accustomed to using the mouse, but once you get the hang of it, you won't want to go back to using a joystick for these programs. Also try the mouse on other programs that require a joystick.

Warren D. Lee
Dayton, OH

\$30F C-64 shorter sorter—I believe this to be the world's fastest Basic number-sorter. I challenge you magician's apprentices—even you Houdinis!—to come up with a faster sorter. My benchmark program first prints a list of 100 ran-

dom numbers in the range 1-100 and then prints the sorted version of the numbers in less than eight seconds.

```

0 REM C64 SHORTER SORTER
1 TI$="00000000":DIMB(100):PRINT "{SHIFT CLR} {C
  TRL 2}";A=RND(-TI):C=1:D=100
2 FORI=CTOD:A=INT(RND(C)*D)+C:PRINTA;:B(A)=
  B(A)+C:NEXT:PRINT:PRINT "{CRSR DN}":FORI=C
  TOD
3 IFB(I)=. THENNEXT:PRINT:PRINT "{CRSR DN}TIM
  E ="TI/60"SEC":WAIT198,1:END
4 PRINTI;:B(I)=B(I)-C:GOTO3
  
```

James F. McConnell
Marathon, NY

\$310 Mouse tracks—The 1350 Mouse works best on a clean, smooth surface. Unfortunately, computer desks aren't always clean or smooth. Rather than buy an expensive pad for your mouse to run on, mouse out a plain plastic placemat for about a dollar or liberate one from the kitchen. It's larger than most mouse pads, so you don't have to pick up your mouse as often. It can be easily cut to match the workspace around your computer, and it's easy to wash.

Warren D. Lee
Dayton, OH

\$311 C-64 star track—This program will supply an interesting background for a space adventure. You can Poke normal or customized characters for the desired effect.

To speed up the stars, add Print commands to the end of line 20. To change characters, substitute other numbers, such as 34, 42, 43 and 58, for 46 in line 30.

```

10 REM Scrolling stars
20 POKE53280,0:POKE53281,0:X=INT(RND(1)*40):PRINT
30 POKE56256+X,1:POKE1984+X,46:GOTO20
  
```

Fred Buike
Madison Heights, MI

\$312 C-64 multiple elevators—Here's a neat little trick for the C-64. Hope you like it!

```

1 REM C64 MULTIPLE ELEVATORS
10 PRINT "{SHIFT CLR}"
20 POKE 220,234
  
```



```
30 PRINT "MULTIPLE ELEVATORS"
40 GOTO 30
```

Tim Dunn
Edgewood, KY

\$313 Last-disk effort—If one of your disks containing valuable data has been rendered useless because of a warped jacket or spilt liquid, don't despair—all may not be lost.

Carefully slit open the wrecked protective jacket and remove the good Mylar disk. Be sure not to touch the recording surface.

Scrounge up an old disk that has a good jacket. Remove the disk from this jacket and insert the disk to be salvaged. Now, resecure the jacket with tape. Then, try initializing the disk (not formatting). If you can't initialize it, turn the disk over; you may have put the wrong side up. If it initializes, make a backup copy immediately and you're all set. If it still doesn't initialize, at least you tried.

Joseph R. Charnetski
Dallas, PA

\$314 C-64 Commo-strobe—This program emulates a strobe light, which allows you to photograph moving objects that you cannot normally see with the naked eye, such as the rapidly spinning blades of a ceiling fan.

When the program prompts you for a delay value, enter a number. The larger the number, the longer the time between flashes.

Pressing the F key while the program is running will flash the light more rapidly, and pressing S will flash the light less rapidly. Pressing P gives you the current flashing frequency and will ask you for comments. Pressing C allows you to reset the delay.

```
5 REM C64 STROBE LIGHT
10 PRINT "{SHIFT CLR}":PRINT "{CTRL 4}":OPEN
   3,4
20 INPUT "DELAY";A
30 POKE 53280,0:POKE 53281,0
40 FOR I=1 TO A:NEXT I
50 POKE 53280,1:POKE 53281,1
60 FOR I=1 TO A:NEXT I
70 GET A$:IF A$="" THEN GOTO 30
80 IF A$="S" THEN A=A+1
90 IF A$="F" THEN A=A-1
100 IF A$="P" THEN PRINT#3,"DELAY- ";A:POKE
    53281,6:INPUT "COMMENTS";B$
110 IF A$="C" THEN PRINT#3,B$
120 IF A$="C" THEN INPUT "NEW DELAY";A
300 PRINT "{SHIFT CLR}":PRINT "DELAY-";A:GOT
   O 30
```

Darren Keith Bolding
Friendswood, TX

\$315 1670 modem auto-answer—An annoying quirk of the 1670 modem is that it will answer all incoming calls when the computer is on. This makes it hard on your friends' ears when they try to call you.

A solution is to buy the Ring Controller from Radio Shack (part #43-127) for \$7.95. It's a replacement modem

cord that connects the "line" connection of the modem with the wall jack. The cord has a switch box that lets you switch off the modem so that it won't detect the phone's ring. Be sure to plug the shorter end of this new cord into the modem and the longer end into the wall. Otherwise, it won't work.

David Dumas
Grovetown, GA

\$316 Crybaby's reward—A special sound effect for a losing game player or an incorrect trivia answer can enliven your programs. Try it on your C-64. Then use it with a Gosub.

```
1 REM C64 CRY BABY'S REWARD
1010 POKE54296,15: POKE54295,0
1020 R=54272: POKER+6,240
1030 POKER+1,4: POKER+5,0: POKER+4,33
1040 FOR Z=1024 TO 512 STEP-8
1050 POKER+1,Z/256: POKER,Z AND 255
1060 NEXT Z
1070 POKER+4,0
1080 REM RETURN
```

W. Stuart Sewell
Asheville, NC

\$317 Commodore kudos—Ever wonder who are the real wizards whose magic lets you perform all those amazing tricks on your C-128? Enter the following incantation on your screen and press the return key to find out.

```
SYS32800,123,45,6
```

You will also see a bit of advice we would all do well to follow.

Daniel Miller
Astoria, NY

\$318 Easy on, easy off—As most 1541 or 1571 disk drive users know, the on/off switch at the back of the drive is inconveniently located. Fortunately, you can solve this problem by connecting the drive to a remote-control extension cord, available in hardware stores for about \$5.

The cord has its own on/off switch. Plug the extension cord into a power source, plug the drive's power cord into the extension cord, depress the drive's switch and leave it in the on position. Thereafter, control the drive's power with the extension cord's switch. It's inexpensive, easy to hook up, and it really works.

William Lees
San Francisco, CA

\$319 1571 disk drive magic—Did you know your 1571 can format and access both sides of a disk with a C-64 or C-128 in C-64 mode? Here's the magical command:

```
OPEN 15,8,15:PRINT# 15,"U0>M1":CLOSE15
```

If you format a disk after sending this command, the 1571 will format both sides and give you 1328 blocks of storage per disk.

If you cannot access a disk that was formatted on a third-

Continued on p. 76.

From p. 10.

party disk drive, you can return to a single-sided mode with this command:

```
OPEN 15,15:PRINT# 15,"U0>M1":CLOSE15
```

Trent Bills
Lincoln, NE

\$31A C-128 screen saver—The C-128's Binary Save command can be used as a nearly "invisible" screen save:

```
BSAVE"SCREEN",P1024 TO P2024
```

It will save text or graphics characters currently on the screen.

To preserve their color values, make a second binary file:

```
BSAVE"COLOR",P55296 TO P56296
```

You will lose some screen area to your BSave commands and the computer's replies, but you can reduce the screen loss with the following command:

```
WINDOW 0,24,39,24
```

This keeps your commands and the computer's replies to a single line, and it won't disrupt the image you're trying to save.

You can also use the screen save to merge programs. If you list single pages of your current program and save them in binary files, you can recall them after you've loaded a new program. Then, you simply exit the Window mode, bring the cursor to the top of the screen and press the return key on every line you wish to add to the current program. (Make sure your new program doesn't duplicate any lines from your old program, or they'll be overwritten.)

Scott Hanson
San Diego, CA

\$31B C-128 spiralgraph—Here's a three-line update to Matt Woodring's "C-128 boxed spirals" (see trick \$2C1, *RUN*, March 1986). It changes most of the variables to let the 128 really do its thing.

```
1 COLOR 0,1:COLOR 4,1
5 A=11:X1=0:Y1=0:X2=160:Y2=195
10 GRAPHIC 3,1:FOR J=0 TO 360 STEP A:BOX
   3,X1,Y1,X2,Y2,J:0:NEXT
20 A=A-.5:X1=X1+5:Y1=Y1+5:X2=X2-5:Y2=Y2-5:GOTO 10
```

James D. Hanke
Yakima, WA

\$31C C-64 screen position—My short machine language subroutine keeps track of the current screen position when I need to display a message in another area of the screen.

For example, after accessing disk files, I include a routine in my program to display disk-status messages in the upper-left corner of the screen. The routine then returns the cursor to its previous screen location. Type SYS 49152 to save the current screen location and SYS 49157 to return the cursor to the previous screen location.

```
10 FOR L = 1 TO 10:READ PC(L):NEXT
```

```
20 L=1 : FORLOC= 49152 TO 49161
30 POKE LOC,PC(L):L=L+1:NEXT
40 DATA 56,32,240,255,96,24,32,240,255,96
90 OPEN15,8,15:INPUT#15,E,E$:GOSUB5000
500 SYS49152:REM SAVE CURRENT SCREEN LOCATION
505 PRINT"{HOME} {CTRL 2}DISK STATUS:{COMD
   7} "E$:REM MESSAGE
510 FORSL=1TO500:NEXT:REM DELAY
515 SYS49157:REM PREVIOUS LOCATION
520 RETURN
```

Stanley C. Evans
Bahama, NC

\$31D C-64 Basic to C-128 Basic conversion—This C-128 Basic program will read a sequential disk file and enter it as a program, using the dynamic keyboard technique. Make sure you're in C-64 mode, and then load the C-64 program to be converted to C-128 Basic. Type in the following lines to create the list file of the C-64 program and press the return key.

```
OPEN 2,8,2,"FILENAME,S,W": CMD 2: LIST
CLOSE 2
```

Now run the following program in C-128 mode.

The program will work in both 40- and 80-column modes, but use the 80-column mode to see the action. The program also works well with programs downloaded in text form via modem.

```
1 REM C64 TO C128
63997 DCLEAR: OPEN 2,8,2,"0:FILENAME"
63998 FAST: DO: C$="": L$="": DO: GET# 2,C$
   : IF ST>64 THEN SLOW: CLOSE 2: PRINT
   "DONE!": END: ELSE: L$=L$+C$: LOOP UNTIL
   C$=CHR$(13): LOOP UNTIL VAL(L$)
63999 PRINT CHR$(147)+CHR$(17)+CHR$(17)+L$;
   : PRINT "GOTO 63998"+CHR$(19);: POKE
   842,13: POKE 843,13: POKE 208,2
```

Mike Tranchemontagne
Nashua, NH

\$31E GET on the C-128—Many of you prefer using the Get routine over the Input routine because Get allows you to stop program execution with the stop key, while Input requires a run/stop-restore combination to break out, thus causing you to lose your screen.

Well, the C-128 has an undocumented fix for this that allows you to break in on the Input prompt. Simply hold down the run/stop key and press the enter key on the keypad. *Voila!* You'll see the familiar Break In Line Xxxx message, with the screen intact.

J. Ian Stott
Hamilton, Ontario
Canada

\$31F Commodore 128 Muzak—Try this trick with your C-128 and disk drive. Insert into the drive the tutorial disk that came with your computer. Then type in these lines in Immediate mode:

```
BLOAD"128MUSIC",B0,P32768
BANK0:SYS 32771,1,1
```


THE SMART WAY TO SAVE YOUR RUN

You'll find all your favorite issues of **RUN** in minutes—and in great condition—with smart-looking binders or file cases from Jesse Jones.

Sturdy, protective file cases make for easy access to each issue, while rugged binders allow magazines to lay flat for easy reference. Both hold

12 issues, are custom-designed in brown with gold spine lettering, and are **unconditionally guaranteed**.

Order today!

File Cases: \$6.95 ea.; 3/\$20; 6/\$36.

Binders: \$8.50 ea.; 3/\$24.75; 6/\$48.

YES! Please send me protection for my **RUN**:



_____ File Cases _____ Binders

I enclose my check or money order for \$ _____

Name _____

Address _____

City _____ State _____ Zip _____

US currency only. Outside US, add \$2.50 per item for postage and handling. Please allow 4-6 weeks for delivery.

MAIL TO: Jesse Jones Box Corp., PO Box 5120, Dept. RUN, Philadelphia, PA 19141

Attention Subscribers

We occasionally make our mailing list available to other companies or organizations with products or services which we feel might be of interest to you. If you prefer that your name be deleted from such a list, please fill out the coupon below or affix a copy of your mailing label and mail it to:

CW Communications/Peterborough
RUN
PO Box 954
Farmingdale, NY 11737

Please delete my name from mailing lists sent to other companies or organizations. **RUN**

Name _____

Address _____

City _____ State _____ Zip _____

R Magic

The music you hear is on the demo program. When it ends, type:

SYS 32771,2,1

And, when *that* finishes playing, type:

SYS 32771,0,1

Now change the 1s to 0s. To stop the music, type:

SYS 32774

Jeremy Winnick
Cloverdale, IN

\$320 Artistic Commodore—Here's a 74-byte machine language title-enhancement routine for the C-64. Whenever you enter SYS 49152, all the graphics and text will be bathed in color. Press the space bar or joystick fire-button to terminate the routine. It makes a nice introduction to your programs!

```

0 REM C-64 TITLE ENHANCEMENT
1 DATA 169,254,45,14,220,141,14,220,169
2 DATA 16,44,0,220,240,40,44,1,220,240
3 DATA 35,169,14,141,250,3,169,24,141
4 DATA 251,3,173,250,3,141,32,208,141
5 DATA 33,208,206,251,3,208,251,206,250
6 DATA 3,201,255,240,213,169,0,240,226
7 DATA 162,15,142,32,208,162,14,142,33
8 DATA 208,169,1,13,14,220,141,14,220
9 DATA 96
10 FORX=0TO73:READA:POKE49152+X,A:NEXT
11 PRINTCHR$(147)SPC(160)CHR$(144)
12 PRINTSPC(8)"(CTRL 9){22 SPACES}"
13 PRINTSPC(8)"(CTRL 9){4 SPACES}{4 SPACES}
MAGIC{4 SPACES}{3 SPACES}"
14 PRINTSPC(8)"(CTRL 9){22 SPACES}"
15 PRINTSPC(8)"(CTRL 9){3 SPACES}{4 SPACES}
IS FUN{5 SPACES}{2 SPACES}"
16 PRINTSPC(8)"(CTRL 9){22 SPACES}"
17 PRINTSPC(222);SPC(222)"PRESS (CTRL 9) SP
ACE (CTRL 0) OR (CTRL 9) FIRE-BUTTON ":S
YS49152
    
```

James Pellechi
Middle Island, NY

\$321 C-64 Digit Fidget—The Number Formatting program in *RUN*'s May 1986 issue ("Basically Speaking") can be accomplished more simply. Line 30 multiplies the integer (INT) of INPUT, C (+ .006 for rounding purposes), by 100 and divides the result by 100, to return the decimal to the correct place. Placing the dollar sign to the left of the output is no problem with this handy magic trick.

```

1 REM C-64 DIGIT FIDGET
10 PRINT"(SHIFT CLR)"
20 INPUT"AN EXAMPLE OF COST $";C:C=C+.006
30 K=((INT(C*100))/100)
40 PRINT"THE COST WAS: ";K
50 PRINT"{14 SPACES}{CURSR UP}$":END
    
```

G. Majewski
Chicago, IL

Compiled by *RUN* staff members
Harold Bjornsen, Margaret Morabito and Tim Walsh

**WIN
BIG!**

In RUN's Giveaway
Sweepstakes
CONTEST DETAILS INSIDE

RUN

September 1986 A CWC/I Publication

RUN'S EXTENDED BASIC
Add More Power to Your C-64

64 NOTEPAD
A Simple Desktop Accessory

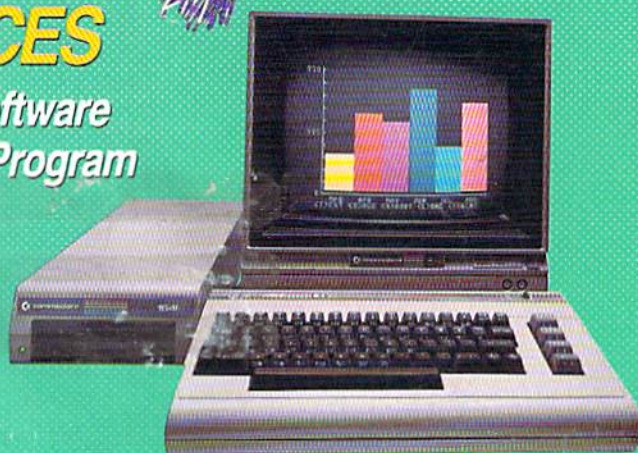
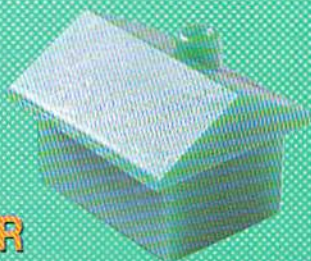
TIPS FROM A PRO
On Taking Screen Shots

TURTLE GRAPHICS TUTOR
FOR CHILDREN

Plus:
CES NEW PRODUCT ROUNDUP

**ORGANIZE YOUR
HOME FINANCES**

—Guide to Available Software
—Easy-to-Use Type-In Program





Hints and tips for Commodore users

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

*Magic
RUN Magazine
80 Pine St.
Peterborough, NH 03458*

If your trick is accepted for publication in the column, you will receive a colorful RUN Magic T-shirt.

"School is Open" is a chant often heard in September, and students wish they also had a chant to make their school system disappear. But alas, this month we have no tricks to exorcise the effects of the first chant, nor a trick to make teachers vanish.

However, we do have a few tricks to help make studying your school subjects a bit easier. First try the many tricks that are available in books on expanding your memory. Then try the magic trick in this month's column that expands the memory capacity of RUN's popular datafile program on your C-128.

If you're lucky enough to have a copy of RUN Script 64 for typing term papers, you also have a way of copying machine language codes. And, when you've finished the homework assignments that take up so much of your time, use the tricks contained herein to save you time typing in programs and Data statements on your C-128.

Come to think of it, this month's tricks will help make your new school year a pleasant experience!

\$322 Colossal Datafile on the C-128—The C-128 greatly expands the memory capacity of Mike Konshak's Datafile program (RUN, November and December 1984). Since the unexpanded C-128 has over three times the available RAM of the C-64, your files can be much larger.

In line 23 of the original Datafile program, simply in-

crease the value of variable M from 30,000 to 60,000. *Presto!* You've got a Datafile 128!

James Adams
Indianapolis, IN

\$323 A faster colossal Datafile—After making the above change to Datafile, you can double the speed of RAM operations by adding the Fast command either to the first line of the Datafile program or as a new line at the beginning of the listing.

You must have an RGB cable connected between the C-128 and the video monitor to use this feature, since the Fast command deactivates the 40-column screen.

James Adams
Indianapolis, IN

\$324 Restructuring DFRestructure—In Mike Konshak's DFRestructure program (RUN, November 1985), changing line 4784 to `MEM = 60000: RL = 0` increases the number of entries you may enter into your files. Now load the old file and either rename the field or increase the length of the field by one character. When you resave the file, you'll have more space for entries.

Clarence F. Cragin
Cottage Grove, MN

\$325 C-128 and Plus/4 screen code decoder—This short Basic program converts screen codes to their equivalent CHR\$ codes and displays the value represented by each character.

```
10 REM C128 & PLUS/4 SCREEN CODES - MARTIN
    GELB
15 PRINT "{SHFT CLR}":CHAR,6,1,"{CTRL 9}SCRE
    EN CODE TO CHR$ CODE":PRINT
17 PRINTTAB(10)"{2 CRSR DNS}{CTRL 0}RUN/STO
    P TO STOP":PRINTTAB(10)"CONT <RETURN> TO
    CONTINUE"
20 FOR S = 1 TO 128
25 A=(S AND 127)OR(S AND 32)OR((S AND 64)*2
    )OR((64-SAND32)*2)
```


Listing continued.

```
30 PRINT:PRINT "{HOME}{7 CRSR DNs}SCREEN COD
E";S;"{2 SPACES}CHAR ";CHR$(A);" CHR$ CO
DE";A
40 FORT=1TO500:NEXT:NEXT
50 PRINT "{SHFT CLR}{CTRL 9}THE END":LIST
```

Change line 20 to INPUT "SCREEN CODE"; S and line 40 to GOTO 20 to inspect individual screen codes.

Martin Gelb
Deerfield Beach, FL

\$326 Entering C-64 programs in C-128 mode—When typing in Basic C-64 programs, use the C-128 mode in order to take advantage of Basic 7.0's editing features and the 1571's rapid disk access. When you're finished, save the program. It should load and run without trouble in C-64 mode.

Richard W. Clark
Barrow, AK

\$327 C-128 onions and Data statements—Chopping onions and typing Data statements are jobs no one likes to perform. The best method for performing these tasks is to assign them to others, thus avoiding spilling your own tears. But, if you must do these jobs yourself, wear goggles before chopping the onions, and type in Data statements using the C-128's Auto feature and programmable function keys. When you're ready to enter the line number of the first Data statement, enter in Direct mode, KEY 1, "DATA":KEY 3, "":AUTO(line-number increment) and press the return key.

To best utilize the C-128's numeric keypad and the re-programmed function keys, you must position your fingers properly on the keys. The index finger operates the 0, 1, 4, 7 and F1 (data) keys. The middle finger also may operate the 0 key, as well as the 2, 5, 8 and F3 (comma) keys. The ring finger operates the decimal, 3, 6 and 9 keys, and the little finger is used to press the enter, minus and plus keys.

Eric Pickell
Palatine, IL

\$328 Up, up and away C-64—Whoever said piloting a hot-air balloon was easy? Windspeed, the rate of ascent and descent, the balloon's fuel consumption and the navigation of the contraption all add up to create a pilot's nightmare. This program opens with the balloon rising from the bottom of the screen. The balloon's buoyancy is controlled by alternately pressing and releasing any key until you alight on the landing pad at the opposite end of the screen.

Obstacles have been placed in the sky to keep your journey to the landing pad challenging. While keeping an eye on the fuel gauge at the top of the screen, navigate over the first obstacle, under the second and then land on the pad. Avoid hard landings and bypassing or colliding with anything on the screen.

Although it is unlikely you'll want to do so, the level of difficulty can be increased by changing the wind speed,

fuel allotment and obstacle locations (L1 and L2) in the first line of the program.

```
10 PRINT "{SHFT CLR}UP, UP AND AWAY - THE SN
ADERS":FUEL=250:WIND=20:L1=1395:L2=1724
20 X=40:Y=228:B=1:V=53248:POKE1612,68:POKE2
040,13:POKE1,42:POKE2,42
30 FORT=0TO7:READQ,D:POKEV+Q,D:NEXT:FORT=83
2TO895:READQ:POKET,Q:NEXT
40 IFPEEK(197)<>64THENA=-.03:FU=FU-1
50 B=B-A:Y=Y-B:POKEV+1,Y:X=X+W/50:POKEV,X:
A=-.03
60 IFPEEK(V+31)=1ORY>229ORX>250ORFU<0THENPR
INT" GAME OVER - TRY AGAIN!":END
70 IFX>239ANDX<243ANDY>141ANDY<145ANDB>-.5A
NDB<.5THENPRINT"NICE LANDING!":END
80 PRINT "{HOME}{CRSR DN} FUEL{4 SPACES}{4 C
RSR LFs}";FU:PRINT" BUOYANCY{4 SPACES}{4
CRSR LFs}";INT(B*100):GOTO40
90 DATA 21,1,28,1,31,0,32,2,33,1,37,12,38,2
,39,7
91 DATA 002,170,128,042,170,168,170,170
92 DATA 170,234,234,234,234,234,234,187
93 DATA 187,187,187,187,187,110,174,173
94 DATA 110,174,173,074,170,161,018,170
95 DATA 132,018,170,132,004,170,016,004
96 DATA 170,016,001,040,064,001,040,064
97 DATA 000,065,000,000,065,000,000,085
98 DATA 000,000,085,000,000,085,000,000
```

Bob Snader and David Snader
Baltimore, MD

\$329 C-64 windows—Have you ever dreamed of writing a Basic program with pull-down menus for your C-64? The following program creates a window for each pull-down menu needed. Variable C determines the color of the window, Y1 is the number of lines down from the top of the screen, X1 is the number of spaces from the left side of the screen, X determines the column width of lines within the window, and Y is the number of horizontal lines in the window. The cursor is placed at the upper-left corner of the screen after the program is run.

Try substituting new values for the above variables to create fast, professional-looking pull-down menus on your C-64.

```
1 REM C64 WINDOWS - ARAN ANDERSON
10 C=1:Y1=3:X1=5:X=5:Y=1:GOTO5000
20 C=C+1:Y1=Y1+2:X1=X1+3:X=X+2:Y=Y+3:IFC=6T
HEN 5050
5000 POKE646,C:PRINT "{SHFT CLR}";:IFY1=0THE
N5010
5005 FORI=1TOY1:PRINT:NEXT
5010 PRINTTAB(X1);"{SHFT U}";:FORI=1TOX:PRI
NT "{SHFT *}";:NEXT:PRINT "{SHFT I}"
5020 FORI=1TOY:PRINTTAB(X1);"{SHFT B}";:FOR
J=1TOX:PRINT " ";:NEXT:PRINT "{SHFT B}":
NEXT
5030 PRINTTAB(X1);"{SHFT J}";:FORI=1TOX:PRI
NT "{SHFT *}";:NEXT:PRINT "{SHFT K}"
5040 PRINT "{HOME}";:GOTO20
5050 PRINTTAB(19){CTRL 2}{10 CRSR DNs}INSI
DE THE ":PRINTTAB(21)"WINDOW{COMD 7}"
```

Aran Anderson
Pocatello, ID

Continued on p. 96.

From p. 13.

\$32A Keeping track of disk commands—If you have a C-128, you now have the problem of remembering two sets of disk commands.

I keep a list of C-64 disk commands on one side of a 5×8 index card and the C-128 list on the other side. Then I prop up the card between my 128's vent panel and monitor stand. Thus, both sets of disk commands are readily visible.

**Eric Pickell
Palatine, IL**

\$32B Copying with RUN Script 64 1.0—Did you know that your copy of RUN Script 64 1.0 can double as a handy machine language code copier? Load and run RUN Script 64 1.0, then insert into your disk drive a disk containing the machine language program to be copied. With the F1 and L keys, load the program file into RUN Script's text area as you would a text file. Now insert another formatted disk into the drive and copy the code to the disk with the F1 and S keys, followed by a filename.

This is a fast and handy method of copying RUN Script ML code and character sets, but be careful—some ML code may save at an improper address and become corrupted. Also, Basic programs cannot be copied this way without extensive modifications.

**Tim Walsh
RUN Staff**

\$32C RUN Script 64 reversed characters—If you have a favorite character set you would like to use with RUN Script 64 1.0, but can't because it lacks reversed characters, here's a fix to get around that problem. First, using the copy method outlined in the above Magic trick, copy the character set(s) you want to use to a disk containing a copy of RUN Script 64 1.0. Next, load and run RUN Script using the standard C-64 character set or any other character set that has reversed characters. Once RUN Script is activated, exit it via the F1 and X keys.

Next, load in the Boot program and change the character set name that resides there to the filename of the preferred character set you saved on the disk. Now run the boot program. Your new character set has replaced the original one. In most instances, you will still retain the first set's reversed characters that are needed for the command bar and printer macros.

**Tim Walsh
RUN Staff**

\$32D Double speed C-64—This trick is of interest to anyone who uses the C-128 in C-64 mode. The program shows how to take advantage of the Fast (2 MHz) mode in your C-64 programs.

```
10 OT=TI:PRINT"{SHFT CLR}DOUBLE SPEED C64 -
   RAMOKOTA REDDY
20 GOTO30:POKE53296,1
30 FORI=1TO924
40 B=I*SIN(I):
```

```
50 NEXTI
60 POKE53265,PEEK(53265)OR16:POKE53296,0
65 T=(TI-OT)/60
70 PRINT"{SHFT CLR}TIME=";T:PRINTTAB(17)"{C
   RSR UP}SECONDS
```

After you run it, the program will display that it took nearly 30 seconds to execute. Now, remove the GOTO 30 from line 20 and run it again. The screen will scramble as the program executes in Fast (2 MHz) mode. Once it is reset in line 60 to Slow (1 MHz) mode, the screen will regain its composure and clear itself. The result? The program will tell you it took less than 15 seconds to run. Use this trick when you want to reduce the execution times of Basic and machine language C-64 programs running on the C-128.

**Ramakota Reddy
Iowa City, IA**

\$32E Doing 128 Loop-Do-Loops—The C-128's Basic 7.0's Do While and Loop While commands can be used in the same Do...Loop. This simplifies some difficult programming tasks. The following program illustrates this with the Shell binary sort:

```
10 PRINT"{SHFT CLR}DO WHILE, LOOP WHILE, DO
   ..LOOP - FRED RANSOM
20 DIMA$(500):NO=-1:DO:NO=NO+1:PRINT"ENTER
   CHARACTERS, * WHEN FINISHED":{2 SPACES}I
   NPUT A$(NO):LOOP UNTIL A$(NO)="*":NO=NO-
   1:PRINT"NUMBER OF ENTRIES = ";NO+1
30 REM SORT
40 PRINT"START SORT: ";TI$:X=TI:D=NO:DO:D=I
   NT(D/2):PRINTD,:FORK=D TO2*D-1:FORI=K TO
   NOSTEPD:J=I:T$=A$(J):DO WHILE A$(J-D)>T
   $:A$(J)=A$(J-D):J=J-D:LOOP WHILE J>=D
50 A$(J)=T$:NEXT:LOOP WHILE D>1:Y=TI:P
   RINT"{2 CRSR DNS}COMPLETED: "TI$:PRINT"T
   OTAL TIME: ";(Y-X)/60;"SECONDS":FOR I=1
   TONO:PRINTA$(I),:NEXT:END
```

**Fred Ransom
Oxnard, CA**

\$32F Input control—Inputting commas or colons necessary in Input statements results in an Extra Ignored error and the loss of the punctuation marks and any data following them. Here's a short routine to put them, along with the data following, into Input statements. The secret is to begin the input with a quotation mark that will validate the use of commas and colons within input data. The following program makes the beginning quotation mark the same color as the background, thereby making the input prompt appear normal.

```
10 REM INPUT CONTROL - NICK PECK
20 CC=PEEK(646):OPEN3,3:CMD3:
21 PRINT"ENTER YOUR AGE, NAME (LAST,FIRST)
   OR '*'TO EXIT";
25 POKE631,29:POKE198,1
30 POKE646,PEEK(53281):PRINTCHR$(34);:POKE2
   12,0:PRINT"{CRSR LF}";
```


Listing continued.

```
40 POKE646,CC:INPUTA$:IF A$=""*THEN SYS 204
8
45 PRINT#3:PRINT"(2 CRSR DNs)"A$:CLOSE3
50 GOTO 20
```

Nick Peck
Sherwood, OR

\$330 C-128 Lo-Res screen dump—Use this subroutine to create hard copies of screen displays. It works in both 40- and 80-column modes—it even does windows!

```
10 REM C128 SCREEN DUMP - MIKE TRANCHEMONTA
GNE
20 OPEN3,3:OPEN4,4,7,CHR$(13):PRINTCHR$(19)
;
30 FOR Y=0TORWINDOW(0)
40 IF RWINDOW(2)=40THENPRINT#4,CHR$(14);
50 FORX=0TORWINDOW(1)
60 GET#3,A$:A=ASC(A$)
70 IF (AAND127)>31THENPRINT#4,A$;
80 NEXTX:PRINT#4,CHR$(13)
90 NEXTY:CLOSE3:CLOSE4
```

Mike Tranchemontagne
Nashua, NH

\$331 C-128 Hi-res screen dump—This C-128 40-column mode program, like some housekeepers, doesn't do windows. However, it does perform accurate screen dumps of both standard and multicolor bit-map screens.

```
100 REM C-128 HIRES SCREEN DUMP - JERRY JARVIS
115 IFRGR(X)>2THEN MODE=159:ELSE MODE=319
120 OPEN3,4:FOR Y=0 TO 199STEP 7
130 PRINT#3,CHR$(15);SPC(10);CHR$(8);
140 FORX=0 TO MODE:CH=0:FORM=0TO6
150 LOCATE X,Y+M:IF RDOT(2)>0THENCH=CH+2{UP
ARROW}M
155 NEXT
160 CH=CH OR 128:A$=A$+CHR$(CH):PRINT#3,A$;
:A$="":NEXTX
170 PRINT#3,CHR$(8):NEXTY:CLOSE3:END
```

Jerry Jarvis
Spokane, WA

\$332 C-64 wedge and the Auto Menu program—Here's a fast and simple way to use the Auto Menu program (see *RUN*, April 1986) with the C-64 wedge. First, copy the DOS 5.1 program onto the disk containing the Auto Menu program. Then add these lines to the program:

```
8 IFA=0THENA=1:LOAD"DOS 5.1",8,1
9 IFA=1THENSYS12*4096+12*256
```

The Auto Menu program will first load the C-64 wedge, then begin working normally. The C-64 wedge commands are now available, and the Auto Menu program can be used over again by typing "/ AUTO MENU" and RUN.

Richard Reisig
Mitchell, NE

Compiled by *RUN* staff members Harold R. Bjornsen, Margaret Morabito and Tim Walsh

RUN CLASS ADS

Graphic Environment Operating System

GEOS

By Berkeley Softworks, with geoWrite, geoPaint, diskTurbo, deskTop, etc. Also includes QuantumLink program and 156 page GEOS User's Guide. All for \$44.95 This is IT! All text in this *RUN* CLASS AD was generated with GEOS fonts. Order today, JOIN the GEOS GENERATION. Please add \$3.00 handling and shipping. (Shipped UPS same day subject to availability).



GEOS
GEOS
GEOS
GEOS
GEOS
GEOS

VISA, MasterCard welcomed.
Call **IntelliLogic**. (800) 672-2887 Ask for Cindy.

TM Berkeley Softworks



"THE LOVEGAME" for ADULTS ONLY

Interactive fantasy game for two or more intimate players. Amusing and suggestive trivia quiz format with provocative "Scoring" system!

Commodore 64/128
\$24.95 postpaid

ALVA DATA Dept J1
28 Alva Street, New Bedford, MA 02740

BATTERIES INCLUDED CUSTOMER SUPPORT



Having problems? Need help? If you have questions about BATTERIES INCLUDED software, call the BI CUSTOMER SUPPORT HOTLINE! Our exclusive support phone number is (416) 881 9816. Our hours are 9 am to 4 pm Monday to Friday. The best time to call—mornings (EST). Worst time to call—Midday! Because this is a free service we must ask that you keep your call brief and to the point. A limit of 5 minutes of free time is permitted per call. If our lines are busy, be patient; if all else fails, please re-read the manual. If you would rather write to us, we'll be glad to send you a personal reply. This service is for registered owners only.

BATTERIES INCLUDED CUSTOMER SUPPORT
30 Mural St., Richmond Hill, Ont., Canada L4B 1B5 (416) 881 9816

LOTTERY PLAYERS!

You've got an edge in the Big Money State LOTTOS by using your computer to do a probability study of the past drawings. Don't waste your time with random numbers, this program performs an analysis of the past winning 6 digit numbers and tells you what numbers are due, what groups to play, any trends and much more! It's available on disk with instructions for all states and Canada. COMMODORE 64/128, ATARI, APPLE, IBM & OTHERS. VISA, MC, Checks. Fast Service! \$21.95.

SOFT-BYTE
COMPUTER PROGRAMS
P.O. Box 556 • Forest Park • Dayton, OH 45405
513-233-2200

RUN Class Ad Section

RUN's New Class Ad section is an opportunity for those with Commodore products to reach *RUN*'s 220,000 readers, at very affordable prices. Considering that *RUN* was the second fastest growing consumer magazine in 1985 (according to the Audit Bureau of Circulation), *RUN*'s circulation is bound to grow even higher in the coming months.

If you have any questions about *RUN*'s Class Ad section, call Heather Paquette at 800-441-4403 or 603-924-9471. We accept checks, money orders, Master Card or VISA.

**WIN
BIG!**

In RUN's Giveaway
Sweepstakes
CONTEST DETAILS
INSIDE

RUN

October 1986 A CWC/I Publication

A SPECIAL LOOK AT SMALL BUSINESS:

- Applications
- Buyer's Guide
- CAD Programs Reviewed
- Easy-to-Use Personal Ledger

INTRODUCING

MEGA-MAGIC, a New Column
Of Useful Type-in Programs

MEET

Computing Guru
Jim Butterfield

PLUS:

An Improved Puzzle Program
For Find-the-Word Fanatics





\$333 C-128 function key tips—The function keys can be programmed to save you time when typing in programs in Direct mode. One of my favorites is for loading programs:

KEY 2, "DLOAD{3 TAB KEYS}" + CHR\$(27) + "@" + CHR\$(13)

Press the F3 key for the disk directory, then position the cursor on the first character of the line containing the program you want to load. Now press F2 to load the program. If you want the program to run after loading, substitute RUN for DLOAD in the above key definition.

Programmers will appreciate this useful F-key definition that updates a program on disk from a program in memory:

KEY5,"SCRATCH" + CHR\$(34) + "FILENAME" + CHR\$(34) + "DSAVE" + CHR\$(34) + "FILENAME" + CHR\$(34) + "DVERIFY" + CHR\$(34) + "FILENAME" + CHR\$(34) + CHR\$(13) + "Y" + CHR\$(13)

Pressing the F5 key will then scratch, save and verify a program!

When defining function keys, be sure to use abbreviations to keep the definitions below 241 bytes in length.

After you have all the function keys set for your use, you may want to save them. Here's how:

BSAVE"FILENAME",B0,P4096 TO P4352

To load after saving any of these redefined F-keys, type: BLOAD"FILENAME",B0.

G. L. Magus
Glenolden, PA

\$334 REM Highlighter program—This program displays reversed REM statements in your Basic listings. As written, REM Highlighter resides at memory location 679 (an unused area of 88 bytes). You may want to use a different RAM location because a reset clears the memory below address 2049. If you use a higher address in RAM, you can reactivate REM Highlighter after a reset by entering a SYS to the starting address. Some suggested starting addresses are 49152 and 53221.

```
10 PRINT "{SHIFT CLR}64 HIGHLIGHTER - BRUCE
   KARPE
20 DEFFN HI(X)=INT(X/256):DEFFN LO(X)=X-FNH
   I(X)*256
30 INPUT"STARTING ADDRESS 679{5 CRSR LFs}";
   SA
```

```
35 I=0:CS=I4
40 READX:IFX=256THEN ON-(CS=2643)GOTO60:PRI
   NT"DATA ERROR":END
50 POKESA+I,X:CS=CS+X:I=I+1:GOTO40
60 POKESA+25,PEEK(774):POKESA+26,PEEK(775)
70 POKESA+1,FNLO(SA+11):POKESA+3,FNHI(SA+11)
80 SYSSA:PRINT"REM HIGHLIGHTER ENABLED":NEW
90 DATA 169,178,162,002,141,006,003,142,007
   ,003,096,008,72,201
100 DATA143,208,005,169,018,032,210,255,104
   ,040,076,026,167,256
```

Bruce S. Karpe
Stroudsburg, PA

\$335 C-64 graph paper—This handy program creates numbered grids for designing sprites. It prints in both standard size and double-size print.

```
10 REM TWO-SIZE GRAPH PRINTER- ADAM MILLER
20 OPEN4,4
25 INPUT "CHOOSE {CTRL 9}L{CTRL 0}ARGE OR {
   CTRL 9}S{CTRL 0}MALL";ES$
30 IFES$="L"THEN PRINT#4,CHR$(14):N=14
35 IFES$="S"THEN PRINT#4,CHR$(15):N=15
40 FOR I=1TO3:PRINT#4,"00000012";:NEXT I:PR
   INT#4
45 FOR I=1TO3:PRINT#4,"00001325";:NEXT I:PR
   INT#4
50 FOR I=1TO3:PRINT#4,"12486285";:NEXT I:PR
   INT#4
55 FOR L=1 TO 25
60 FOR I=1 TO 24:PRINT#4,CHR$(N);"{SHIFT O}"
   ;:NEXT:PRINT#4,"{COMD G}"L;CHR$(8):NEXTL
70 FOR I=1 TO 24:PRINT#4,CHR$(N);"{COMD T}"
   ;:NEXT:PRINT#4,CHR$(8)
```

Adam Miller
Brandon, SD

\$336 Printing with C-64 sound effects—Use this routine to enhance your programs. Each time a character is printed, it is preceded by a reversed space cursor and a soft beeping sound. You can start printing at any column by changing the tab variable T in lines 120 and 140.

If you wish to customize the routine, Poking any number

up to 255 into S + 1 in line 200 will change the sound, and increasing or decreasing the delay loop in line 260 changes the printing speed.

```
10 REM PRINT WITH SOUND EFFECTS - JOSEPH R.
  CHARNETSKI
100 A$="{CTRL 2}PRINTING WITH SOUND EFFECTS
  "
110 PRINT "{SHFT CLR}{5 CRSR DNS}"
120 T=6:GOSUB180:PRINT
130 A$="{CTRL 8}BY JOSEPH R. CHARNETSKI"
140 T=8:GOSUB180
150 REM CONTINUE
160 PRINT "{COMD 7}":LIST
170 REM SOUND
180 S=54272:FORM=STOS+23:POKEM,0:NEXT
190 POKES+24,10:IFTTHENPRINTTAB(T);
200 FORJ=1TOLEN(A$):POKES+1,23
210 IFLEFT$(A$,1)<>"{CTRL 9}"THEN230
220 PRINT "{CTRL 9} {CRSR LF}";:GOTO240
230 PRINT "{CTRL 9} {CTRL 0} {CRSR LF}";
240 POKES+6,240:POKES+4,23
250 PRINTMID$(A$,J,1);
260 FORDLAY=1TO10:NEXTDLAY:POKES+6,0
270 POKES+4,0:NEXTJ:T=0:PRINT:RETURN
```

Joe Charnetski
Dallas, PA

\$337 Hi-res-sketch-128—Here's a program that will let you sketch a hi-res picture on your 128. The table below gives a brief description of each key's function.

Y = up one pixel J = right one pixel
B = down one pixel H = left one pixel
T = move left and up one pixel
U = move right and up one pixel
V = move left and down one pixel
N = move right and down one pixel
P = paint an enclosed area

```
5 REM SIMPLE SKETCH C128 - ANDY BRAILO
10 GRAPHIC 1,1: X=150: Y=90: DRAW1,X,Y TO X
  ,Y:CHAR1,11,0,"SIMPLE SKETCH"
20 CHAR1,0,1,"{39 SHFT DS}"
30 GETAS:IFA$=""THEN30
40 IFA$="Y" THEN Y=Y-1:GOTO60
42 IFA$="B" THEN Y=Y+1:GOTO60
44 IFA$="H" THEN X=X-1:GOTO60
46 IFA$="G" THEN X=X+1:GOTO60
48 IFA$="N" THEN X=X+1: Y=Y+1:GOTO60
50 IFA$="T" THEN X=X-1: Y=Y-1:GOTO60
52 IFA$="V" THEN X=X-1: Y=Y+1:GOTO60
54 IFA$="U" THEN X=X+1: Y=Y-1:GOTO60
56 IFA$="P" THEN PAINT1,X+1,Y,1:GOTO30
58 GOTO30
60 IF X>318 THEN X=X-1:GOTO30
65 IF Y>198 THEN Y=Y-1:GOTO30
70 IF X<0 THEN X=X+1:GOTO30
75 IF Y<12 THEN Y=Y+1:GOTO30
80 DRAW1,X,Y TO X,Y
85 GOTO30
```

Andy Brailo
Alpha, NJ

\$338 Reverse append-ectomy—To combine two or three programs into one larger program takes a lot of

10 / RUN OCTOBER 1986

work. An easy way is to combine them with an append routine. Load your first program and type, in Direct mode:

```
POKE 43,PEEK(45)-2:POKE 44,PEEK(46)
```

Now renumber the lines in the second program, beginning with a number higher than the last number in the first program. Load your second program and type:

```
POKE 43,1:POKE 44,8
```

When you type LIST and press return, you'll find that the second program has been appended to the first. (Note: If you get an Overflow error, try adding an unnecessary line to the new program, such as 0 REM.)

Adzhar Hamdan
Syracuse, NY

\$339 Quick-loading Basic 4.5 a la C-128 mode—To quickly load Basic 4.5 in 128 mode, enter these two lines and run the program. Be sure your monitor is in 40-column mode.

```
10 BLOAD"BASIC 4.5",B0,P32768
20 GO 64
```

Arhn R. Sprinty
Zumbrota, MN

\$33A Converting C-64 function keys to C-128—Any C-64 program that uses the function keys can be converted to work on your C-128. This four-liner will do the trick. Just add it early in your program.

```
10 REM CONVERTING C128 FUNCTION KEYS - ROBE
  RT H. WADE
20 A=132
30 FORI=1TO8STEP2:KEYI,CHR$(A+1):A=A+1:NEXT
40 A=136
50 FORI=2TO8STEP2:KEYI,CHR$(A+1):A=A+1:NEXT
```

Robert H. Wade
San Diego, CA

\$33B Pin the tail on the decimal point—Here's a short routine that redefines the decimal point key on the 128's numeric keypad into a comma. The routine can be used to change any key on the keyboard to another ASCII value.

```
10 REM COMMA FOR NUMERIC KEYPAD 128 - KEVIN
  MULLIGAN
20 FORI=0TO88:POKE 6912+I,PEEK(64128+I):NEX
  T
30 POKE 2757,PEEK(2757) OR 128
40 POKE 830,0:POKE 831,27
50 POKE 6912+82,44
```

To find the key value, use this program.

```
10 PRINT PEEK(213):GOTO 10
```

Kevin P. Mulligan
Burlington, MA

\$33C GET-with-flashing-cursor update—My version of trick \$2F0, GET with flashing cursor, works in both 40- and 80-column modes on the C-128.

Continued on p. 100.

From p. 10.

```
10 PRINT "{SHFT CLR}GET W/CURSOR 64/128 - CH
  ARLES KLUEPFEL
20 OPEN 3,3
30 GOSUB 60
40 B$=B$+A$:IFA$=CHR$(13)THENPRINT "{2 CRSR
  DNs}";B$:B$=""
50 GOTO 30
60 GET#3,Z$:PRINT "{CRSR LF}";
70 GET#3,Z$:PRINT "{CRSR LF}";
80 PRINT "{CTRL 9) {CTRL 0}{CRSR LF}";:GETA$
  :PRINTZ$ "{CRSR LF}";:IFA$=""THEN80
90 PRINTA$;:RETURN
```

Charles Kluepfel
Bloomfield, NJ

\$33D Son of Burrow—I've added color and sound to Magic's first published trick (\$00, January 1984). My little toddler enjoys watching it, but hey, so do I!

```
0 REM SON OF BURROW - DOUGLAS BURR
1 A$="{CRSR UP}{CRSR DN}{CRSR RT}{CRSR LF}"
  :B$="{CTRL 1}{CTRL 2}{CTRL 3}{CTRL 4}{CTR
  L 5}{CTRL 6}{CTRL 7}{CTRL 8}{COMD 1}{COMD
  2}{COMD 3}{COMD 4}{COMD 5}{COMD 6}{COMD
  7}{COMD 8}":DIMH(16):FORI=1TO16:READH(I):
  NEXT:W=54276
2 F=54273:DATA39,37,42,44,47,50,53,56,59,63
  ,67,71,75,79,84,89:FORS=54273TO54296
3 POKES,0:NEXT:POKE54296,15:POKE54277,100:P
  OKE54278,100:POKEW,33
4 D=INT(1+(16-1+1)*RND(.)):PRINTMID$(A$,RND
  (.)*4+1,1)"*{CRSR LF}";
5 PRINTMID$(B$,RND(.)*16+1,1)"{CTRL 9) {CRS
  R LF}";:POKEF,H(D)/3.5:GOTO4
```

Douglas Burr
White Plains, NY

\$33E Typing for toddlers—Children will have fun printing short messages they've typed on the screen, without having to load a word processor. Type in this little program.

```
0 REM SIMPLE TEXT PRINTING - JERALD BROWN
10 OPEN 4,4,7
20 INPUT"TYPE IN WORDS:";A$
30 PRINT#4,A$
40 GOTO 20
```

Youngsters can type in words or short messages, which will print out on hard copy when they press the return key.

Jerald Brown
Erlanger, KY

\$33F Catch the wave—I had a problem with wavy lines scrolling up my monitor screen. I discovered that the fluorescent light on my computer desk was the culprit. Switching to incandescent lights solved the problem.

Jerald Brown
Erlanger, KY

\$340 Decimal fractions = common fractions—I've written a program that converts decimal fractions into their equivalent common fractions.

```
0 REM DECIMALS TO FRACTIONS - ED DARACK
10 PRINT "{SHFT CLR}{COMD 4}":POKE 53280,0:P
  OKE 53281,0
20 INPUT "INPUT A DECIMAL NUMBER";X
30 X$=STR$(X):T=LEN(X$)
40 PRINT "{CRSR DN}{CTRL 6}WORKING{CRSR DN}
  "
50 FOR Y=1 TO 256
60 FOR Z=256 TO 1 STEP-1
70 E=(Y/Z):E$=STR$(E):IF LEFT$(E$,T+1)=X$ T
  HEN 100
80 IF Y=256 THEN PRINT "{3 CRSR DNs}{CTRL 8}
  {CTRL 9}NUMBER TOO LARGE{CRSR RT}{CTRL 0}
  "
90 PRINTZ,Y "{3 CRSR LFs}{CRSR UP}":NEXT:NEX
  T
100 PRINT "{CRSR DN}{CTRL 5}THE FRACTION FO
  RM OF";X;"IS{CTRL 8}";Y;" / ";Z
110 PRINT "{CRSR DN}{CTRL 3}ANOTHER (Y/N)"
120 GET A$:IF A$=""THEN 120
130 IF A$<>"N"THEN 10
140 END
```

Ed Darack
Lompoc, CA

\$341 Heads or tails?—This one-liner simulates 100 coin tosses. Teachers and students of Basic programming may find the program of interest. It demonstrates important concepts, including For...Next looping, the RND function, Boolean expressions and subscripted variables. That's a lot of programming knowledge in a small package!

```
10 REM COIN TOSS SIMULATOR - S. SANDER
20 PRINT "{SHFT CLR}":FORX=1TO100:T=(RND(0)>
  .5)+1:S(T)=S(T)+1
30 PRINT "{HOME}HEADS:"S(0)TAB(18)"TAILS:"S(
  1):NEXT:CLR: INPUT"AGAIN(Y/N)";N$
40 IFN$="Y"GOTO10:END
```

Stephen Sander
Kennett Square, PA

\$342 3.14159C64C128—This program gives you successively more accurate approximations of pi, and they are correct to eight decimal places after only ten passes.

```
10 A=1:B=1:C=1
20 A=A+2:B=B*(A-2):C=C*(A-1):D=2!A*A:E=E+B/C
  :D:PRINT(E+.5)*6:GOTO20
```

Dana A. Berry
Provincetown, MA

\$343 Byte-size sequential files—If you've ever tried to load an important sequential file into a word processor, only to find that it was too long to fit into its text buffer, then my program is for you.

The program asks you for the filename of that long file and the desired size, in bytes, of your new, smaller files. It then splits your large file into several smaller files with filenames beginning with 1, 2, and so on.

```
0 REM SPLITTING SEQ FILES - JIM BRANBERG
1 INPUT "{SHFT CLR}{CRSR DN} FILENAME";N$:IN
  PUT "{CRSR DN} SIZE OF NEW FILES (IN BYTES
  )";B$:CK%=VAL(B$)
```



```

2 ST%=64:N=49:OPEN 2,8,2,N$+"R"
3 AA$=CHR$(N)+CHR$(160)+N$:X=0:Q=0:OPEN 3,
  8,3,AA$+"W"
4 GET#2,A$:Z=ASC(A$+CHR$(0)):IF Q%=1 THEN 6
5 IF Z=44 OR Z=59 OR Z=58 THEN A$=CHR$(34)+A
  $:Q%=1
6 IF A$=CHR$(13) GOTO 9
7 IF STATUS AND ST% THEN PRINT#3,B$:PRINT#3
  :CLOSE 3:CLOSE 2:END
8 B$=B$+A$:GOTO 4
9 X=X+1:EN(B$)
10 PRINT#3,B$:IF X>CK% THEN N=N+1:PRINT#3:CL
  OSE 3:GOTO 3
11 B$="":GOTO 4

```

Jim Branberg
Los Angeles, CA

\$344 Number formatting—You can format and accurately round numbers to any desired number of decimal places. The resulting string will contain zeros to fill places having no digit, including an initial zero for numbers between zero and one.

```

10 REM NUMBER FORMATTER - ROBERT FLETCHER
20 K=4:REM # OF DECIMAL SPACES
30 PRINT{SHFT CLR}{3 CRSR DNs} "N,N$
40 PRINT{2 CRSR DNs} INPUT N {CRSR DN}":IN
  PUTN
50 X=INT(N*10{UP ARROW}(K+1)):X$=STR$(X)
60 IF VAL(RIGHT$(X$,1))>4 THEN X=X+1
70 X$=STR$(X):L=LEN(X$):IF L>K+2 THEN 110
80 N$="0.":IF L=K+2 THEN 110
90 FOR J=1 TO (K+2-L):N$=N$+"0":NEXT
  J
100 N$=N$+MID$(X$,2,L-2):GOTO 120
110 N$=MID$(X$,2,L-K-2)+"."+MID$(X$,L-K,K)
120 PRINT{2 CRSR DNs} "N,"*N$*"
130 GETKEY RPT$
140 GOTO 10

```

Robert Fletcher
Annandale, VA

\$345 SFD 1001 disk renamer—Luke Mester's Disk Name Changer (trick \$2DD) is a useful program, and I've made these line changes so that owners of SFD 1001 disk drives can change disk names, too.

```

10 REM SFD 1001 RENAMER - DAVE ENGLISH
150 PRINT#15,"U1:2,0,39,0"
160 PRINT#15,"B-P:2,6"
200 PRINT#15,"B-P:2,6":PRINT#2,DN$:
210 PRINT#15,"U2:2,0,39,0":CLOSE 2

```

Also, a user-friendly code should give you the opportunity to check and correct input. Here's a code for that check. It works with any drive.

```

174 :
191 PRINT"VERIFY: "DN$
192 PRINT"OK (Y/N) ?"
193 GETA$:IFA$<>"N"AND A$<>"Y"GOTO 193
194 IFA$="N"GOTO 175

```

Dave English
Orange, CA

\$346 Quick directory C-64—The Safe Directory program Pokes a short machine language routine into memory, beginning at location 830. The routine reads and displays the directory of the current disk, without harming a Basic program. To use it, type SYS 830 and press return. The directory will then be displayed as it is read from the disk. Press the shift or shift/lock key to pause the output, and the run/stop key to stop output.

Append the Basic loader to the end of your routine, and use the Gosub command to access it.

```

10 PRINT{SHFT CLR}QUICK DIRECTORY C-64 BY
  D. MORRIS
15 FORA=830TO945:READB:POKEA,B:C=C+B:NEXT
20 IFC<>16387THENPRINT:PRINT"ERROR IN DATA"
  :STOP
25 PRINT:PRINT"'SYS830' TO ACTIVATE - 'SHIF
  T' TO PAUSE"
30 SYS830
35 DATA169,2,162,176,160,3,32,189,255,169,1
  ,162,8,160,0,32,186,255,32,192
40 DATA255,24,162,1,32,198,255,176,75,32,20
  7,255,32,207,255,169,13,32,210,255
45 DATA32,207,255,32,207,255,32,207,255,133
  ,252,32,207,255,133,251,165,144
50 DATA208,44,165,251,166,252,32,205,189,16
  9,32,32,210,255,32,207,255,32,210
55 DATA255,174,141,2,208,251,166,145,224,12
  7,240,15,32,207,255,105,0,208,235
60 DATA169,13,32,210,255,76,102,3,24,169,1,
  32,195,255,32,204,255,96,36,48

```

David W. Morris
Atmore, AL

\$347 Instant reset button—Transform your C-64's restore key into a reset button with this two-line program.

```

0 FORA=40704TO40706:READB:POKEA,B:NEXT:FORA
  =32770TO32776:READB:POKEA,B:NEXT:NEW
2 DATA32,248,252,0,159,195,194,205,56,48

```

Chris Mansfield
Poplar Bluff, MO

\$348 Time machine 64/128—Convert improper times into correct form. For example, 1 hour, 71 minutes becomes 2 hours, 11 minutes.

```

10 PRINT{SHFT CLR}TIME MACHINE 64/128 - MI
  KE DANIEL
11 INPUT{3 CRSR DNs}HOW MANY ENTRIES";EN:
  IF EN<11 THEN 19
12 DIM M(EN)
19 PRINT "{SHFT CLR}":FOR E=1 TO EN
20 PRINT"#E:INPUT "HOURS";H(E):INPUT"MINUT
  ES";M(E):PRINT "{SHFT CLR}":NEXTE
30 FORE=1 TO EN:TH=TH+H(E):NEXT
40 FORE=1 TO EN:TM=TM+M(E):NEXT
50 IF TM<60 THEN 10000
60 IFTM=60 THEN TH=TH+1:TM=0:GOTO 10000
70 D=TM-60:TM=D:D=0:TH=TH+1:IFTM<60 THEN 10000
  0
9999 GOTO 70

```


Attention Subscribers

We occasionally make our mailing list available to other companies or organizations with products or services which we feel might be of interest to you. If you prefer that your name be deleted from such a list, please fill out the coupon below or affix a copy of your mailing label and mail it to:

CW Communications/Peterborough
RUN
PO Box 954
Farmingdale, NY 11737

Please delete my name from mailing lists sent to other companies or organizations. **RUN**

Name _____
Address _____
City _____ State _____ Zip _____

Circle 251 on Reader Service card.

**NEW VERSION 3.0
FOR C64 & C128
IN 128 MODE.**

**WIKBOB
THE
MIRROR
WIKBOB
DISK COPIER
\$24.95**

NO FINER OR MORE ADVANCED ARCHIVAL COPIER AVAILABLE AT ANY PRICE.
EASY TO USE. DOES NOT CAUSE DRIVE HEAD TO KNOCK.
COPIES UP TO 41 TRACKS.
PERIODIC UPDATE POLICY.
AUTOMATICALLY MAKES BACK-UP COPIES FROM VIRTUALLY ALL PROTECTED SOFTWARE.
NIBBLES, HALF TRACKS, COPIES EXTRA SECTORS AND EXTRA TRACKS.
REPRODUCES ALL DISK ERRORS AUTOMATICALLY.
FAST. COPIES FULL DISK IN AS LITTLE AS 4-7 MINS. EVEN COPIES ITSELF.

WE COPY MORE!
MASTERCARD, VISA, M.O. OR CHECK OK
+ \$3 SHIPPING & HANDLING
C.O.D. OR FOREIGN ORDERS ADD \$2
CALIF. ORDERS ADD 6% SALES TAX
— WRITE OR CALL —

Compumed

(408) 758-2436
P.O. BOX 6939
SALINAS, CA 93912
FOR COMMODORE 64 AND 1541 DRIVE
OR COMMODORE 128 AND 1571 DRIVE

R Magic

10000 PRINT" HOURS....."TH:PRINT" MINUTES..."
TM:END

Mike Daniel
Fountain Valley, CA

\$349 Datafile punctuation—In Mike Konshak's Datafile program (*RUN*, November and December 1984), you cannot include commas, colons or semicolons in data you are entering. But you can if you enclose such data in quotes, for example, "Anucci, Mary Lynn: unemployed." The quotes aren't counted as characters, and they won't appear in any printouts.

David M. Palo
Escanaba, MI

\$34A Protect your writes—It's always a good idea to use write protects to safeguard the information on your disks, and when they wear out, black electrical tape is an inexpensive replacement. Use tape that's from one-half to three-quarters of an inch wide, and cut it about an inch long. It works great!

John Chong
Syracuse, NY

\$34B Printer grease—After I ran nearly 7000 sheets of paper through my Panasonic KXP-1091 printer, the paper bail pivot arms on the square tractor drive shaft had had a lot of wear and started jumping, causing the platen to jam. Replacing the damaged parts can be expensive. Apply a dab of white grease such as Lubriplate to the pivot arms where the square shaft passes through them. If I'd done this when I purchased my printer, I'd've saved myself a lot of grief.

Jay H. Graff
Bossier City, LA

\$34C Easier loading 1571—When running unprotected C-128 programs in a 1571 disk drive, you may have noticed that the disk drive sometimes has trouble finding the program you want to run. The problem is that in 128 mode, the 1571 has difficulty reading programs written in single-sided format. If you make a copy of your unprotected software onto a 1571 double-sided format, you will have much smoother and faster loads. This works great with the autobooters, too. Try copying your 1571 test/demo disk using the double-sided format and watch how fast DOS shell loads.

Jay H. Graff
Bossier City, LA

Compiled by *RUN* staff members Harold R. Bjornsen, Margaret Morabito and Tim Walsh. Send your trick submissions to Magic, *RUN* magazine, 80 Pine St., Peterborough, NH 03458.

RUN

The Commodore C-128/C-64 Home Computing Guide

November 1986 A CWC/I Publication

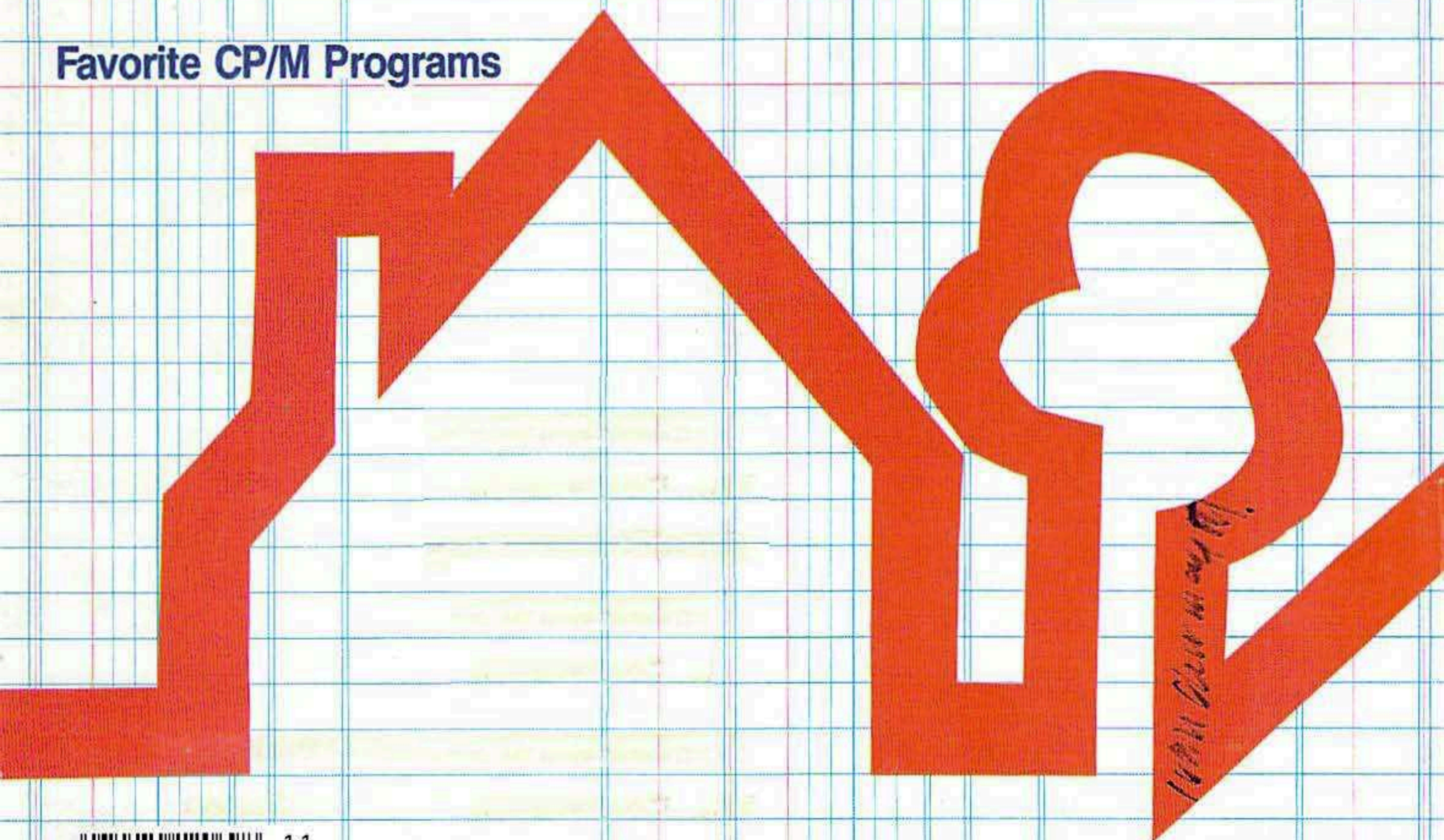
SPREADSHEETS

Keep Your Home Budget in Line!

Master Your Printer and Interface

An Easy Way to Save Lo-Res Screens

Favorite CP/M Programs





By JIM BORDEN

Hints and tips for Commodore users

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

*Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458*

If your trick is accepted for publication in the column, you will receive a colorful RUN Magic T-shirt.

\$34D Cleaning heads—Here's a good way to clean disk drive heads—with a C-128! First, insert a cleaning disk into the drive and turn on the computer. Then hold down the reset switch for 30 seconds—the job's done!

**Unknown contributor
Bayfield, WI**

\$34E How do you spell help?—Here's a short C-128 program that tells you where to turn for help.

```
1 REM REDEFINE C-128 HELP - IAN CILLAY
10 L=13:POKE 4105,L:FOR J=4096 TO 4104:C=C+
  PEEK(J):NEXT
20 FOR R=1 TO L:READ D:POKE 4105+C+R,D:NEXT
30 DATA 82,85,78,32,77,65,71,65,90,73,78,69,
  141
```

To restore the normal help-key definition, change the value of L in line 10 to 5 and enter the following as line 30:

```
30 DATA 72,69,76,80,13
```

Line 10 pokes the length of the help-key string into location 4105 and calculates the location where the help-key definition begins. Line 20 reads the values of the new characters from the data in line 30 and pokes them into the proper location. End the string with a carriage return (ASCII value of 13) to execute a command, or a shifted return (ASCII value of 141) to move the cursor to the beginning of the next line.

The help-key definition can also be viewed in hexadecimal with the C-128's built-in monitor by typing M \$1000.

**Ian Cillay
Bethesda, MD**

\$34F Menu in reverse—The following routine should work on all Commodore computers. It produces a menu with reverse fields just as in some commercial programs. Use the cursor up-and-down key to move the reverse field bar, and press return to make your selection.

If you want the menu to appear somewhere other than in the upper-left corner, insert cursor movements after H\$ in line 130. You have to use the same cursor movements before printing R\$ on line 170. The variable A is the screen line on which the reverse field will be printed. The first line is line 0, the second line 1, and so on.

```
10 REM C64/C128 MENU IN REVERSE - DAVID LU
100 REM * REVERSE OPTION *
110 REM * R$=REVERSE ON, H$=HOME *
120 PRINT"(SHIFT CLR)":A=1:R$=CHR$(18):H$=CHR$(19):P1$=R$
130 PRINTH$P1$" OPTION 1 "
140 PRINTP2$" OPTION 2 "
150 PRINTP3$" OPTION 3 "
170 PRINTH$:FOR I=0 TO A:PRINT:NEXT:PRINTR$
180 GETA$:IFA$="" THEN 180
190 REM NEXT LINE CAN CONTAIN ON-GOTO AFTER IF-THEN
200 IFA$=CHR$(13) THEN PRINT"OPTION"A"IS SELECTED.":END
210 P1$="":P2$="":P3$=""
```


Magic

Listing continued.

```
220 IF A$=CHR$(17) THEN ON A GOTO 240,250,260
230 IF A$=CHR$(145) THEN ON A GOTO 250,260,240
240 A=2:P2$=R$:GOTO 130
250 A=3:P3$=R$:GOTO 130
260 A=1:P1$=R$:GOTO 130
```

David Lu
Tucson, AZ

\$350 Deleting a block of lines—This tip is useful to VIC-20 and C-64 users who wish to delete a block of lines. First type POKE774,0 and press the return key. The List command lists only the line numbers. Now list the block of lines you wish to delete, move the cursor to the first line number and press return to delete each line shown.

If you wish to delete more lines than will fit on the screen, just repeat the list-and-return sequence above until all lines in the block have been deleted.

After you've finished, you must type POKE774,26 and press return to restore the normal List command.

David Pampreen
Belleville, MI

\$351 Limited input routine—Here's a short machine language Get routine for the C-64. It provides control for you to limit the number of characters that are input. No more POKE198,0; no more GET A\$:IF A\$="" THEN..., and so on. Any value from 1 to 255 may be passed to the routine. The cursor will flash automatically, and the only acceptable characters are the alphanumeric, uppercase/graphics, delete and return. This means the cursor cannot move off the line you start it on by using the cursor control keys.

Experiment with the routine by positioning the cursor as you would normally do in any program, and then provide the appropriate SYS number for accessing the new routine. An example of the proper format to use the Get routine follows:

```
10 A$="":REM STRING MUST BE FIRST VARIABLE
   <Your program goes here.>
520 PRINT CHR$(147);REM POSITION CURSOR
530 SYS 49152,16:PRINT A$
```

In line 530, the value 16 is passed to the routine, setting a maximum limit of 16 characters to input. If no value is passed, then a default of 1 is used. Be sure you define the string variable you want to use as the *first* variable in your program.

Pressing return will exit the Get routine. When you're back in the Basic program, A\$ (or whatever string you defined first in your program) will hold the value that was input.

```
10 REM C-64 LIMITED INPUT ROUTINE - JAMES P
   ELLECHI
97 REM ALL PURPOSE 'GET' (C-64)
98 REM FORMAT: {2 SPACES} SYS 49152, [1-255]
100 FOR X=49152 TO 49262: READ Z: T=T+Z: POKE X, Z: N
   EXT: IFT <> 15813 THEN PRINT "ERROR": STOP
101 DATA 160,0,140,111,192,132,204,177,122,
   201,44,240,4
```

```
102 DATA 162,1,208,3,32,241,183,142,112,192,
   32,228,255
103 DATA 201,0,240,249,201,13,240,53,201,20
   208,10,172
104 DATA 111,192,240,236,206,111,192,16,29,
   170,41,127,201
105 DATA 32,144,224,138,172,111,192,204,112
   192,176,215,238
106 DATA 111,192,208,5,206,111,192,48,205,1
   53,113,192,32
107 DATA 210,255,169,0,133,212,76,23,192,16
   0,2,173,111
108 DATA 192,145,45,200,169,113,145,45,200,
   169,192,145,45
109 DATA 230,204,169,32,76,210,255
```

James Pellechi
Middle Island, NY

\$352 C-128 Perfect Typist windows II—The July 1986 issue of *RUN* contained a Magic trick (\$302) for using a window with the C-128 Perfect Typist program. This trick works fine if you're using an 80-column monitor. However, if the 40-column monitor is in use, the computer will return an Illegal Quantity error in line 60.

Since the C-128 Perfect Typist program already detects for 40 or 80 columns in line 25, either screen width can be handled with the following modifications.

Insert W=39: after the A\$="": in line 25 and add W=79 to the end of line 25. This change sets the correct number of columns for the Window command. Then insert WINDOW 0,4,W,24: before the SYS command in line 60. Now the window will be set to the proper width no matter which screen you are using.

Allen L. Larkins
Sandusky, OH

\$353 A "Draw"-back in 7.0—One of the few bugs in Basic 7.0 is in the Draw command. When you attempt to draw with a negative increment such as DRAW 1,50,50 TO -20,25, you will get an Illegal Quantity error. To avoid this problem, use the RDOT function. RDOT(0) and RDOT(1) return the value of the X and Y positions of the pixel cursor, respectively. If you change the line above to DRAW 1,50,50 TO RDOT(0)-20,RDOT(1)+25, your program will work fine.

Warren Roper
Gainesville, GA

\$354 C-128 customizer—If you're like me, there are several things you may change each time you start up your C-128. For example, I change the screen colors and the function key definitions. I use the following program to make all the changes I want at one time. The new function key definitions are very much like the old DOS wedge commands. You simply list the directory, move the cursor to the filename you want and press the F2 key to load or F5 to run the program. The PRG is automatically deleted from the end of the line. You can make any other changes you like.

To make the program easy to use, I put it on each new disk I format. This allows it to run with the shift-run/stop

Continued on p. 108.

Magic

From p. 12.

combination, and from then on you can use the directory to load or run other programs. This method also allows another program on the disk to be an auto-boot program. Give the program a try. I'm sure you won't want to work without running your version of it first.

```
10 REM C-128 CUSTOMIZER - JIM BORDEN
20 COLOR0,13:COLOR4,12:CLS=CHR$(27)+"Q"+CHR$(13)
30 KEY 2,"DLOAD{3 CTRL Is}"+CLS
40 KEY 3,"DIRECTORY"+CLS
50 KEY 5,CHR$(29)+CHR$(20):REM CURSOR 'BLAC K HOLE'
60 KEY 6,"RUN{3 CTRL Is}"+CLS
70 KEY 7,"LIST"+CHR$(27)+"@"+CHR$(13)
80 PRINT"(SHFT CLR)"CHR$(14):COLOR6,2:COLOR5,1
90 IF RGR(0)=5 THEN FAST:REM 80 COL
100 NEW
```

Jim Borden
Carlisle, PA

\$355 MLBooter—If you use short Basic programs, usually called boots, to load machine language and enter a SYS command to activate the ML, there's no need to clutter your disks with a specific boot for each ML routine. You can use the program below to boot any ML of the type described above, and it will execute the appropriate SYS command automatically.

Since loading ML from Program mode does not disrupt Basic's internal pointers, it isn't necessary to use a New command. So, without reloading ML Booter, you can run it again to boot as many ML programs as you like.

The ML program's SYS address must be the first byte in the program for ML Booter to activate it. If you must access an address other than the first byte, you will need a separate boot program.

```
10 PRINT"(SHFT CLR)C-64 ML BOOTER - SUSAN C HARNETSKI{CRSR DN}"
20 IFA=0 THEN INPUT"FILENAME";F$:OPEN15,8,15
30 OPEN2,8,2,F$+"P,R":IFATHEN70
40 INPUT#15,E,E$:CLOSE2:CLOSE15:IFE=0 THEN60
50 PRINT;E$:INPUT"(CRSR DN)HIT RETURN";R$:RUN
60 A=1:PRINT"(CRSR DN)LOADING.":LOADF$,8,1
70 GET#2,L$,H$:CLOSE2:L=ASC(L$+CHR$(0))
80 X=L+ASC(H$+CHR$(0))*256
90 PRINTF$ " ACTIVATED.":SYSX
```

Susan Charnetski
Plains, PA

\$356 The way we were—Sometimes there's magic in memories. We're not old enough to long for NASA's good old days, but we will, for a while at least, miss the scene depicted in this program.

We think this C-64 program produces a pretty spectac-

ular display. Turn up the volume on your monitor to get the full effect.

```
1 REM THE WAY WE WERE - BOB & DAVID SNADER - C-64
10 PRINT"(SHFT CLR){2 CRSR DNs}THE WAY WE WERE...":PRINT"(2 CRSR DNs)PRESS ANY KEY";
20 V=53248:S=54273:B=3:POKE2040,13:POKE2041,14:FORJ=842TO919:READK:POKEJ,K:NEXT
30 FORJ=0TO2:READK,L:POKES+K,L:NEXT:FORJ=0TO8:READK,L:POKEV+K,L:NEXT
40 GETK$:IFK$="" THEN40
50 FORC=9TO0STEP-1:PRINTC;"{3 CRSR LFs}";:POKES+23,15:POKES+23,0:FORC=0TO950:NEXT:NEXT
60 FORY=245TO40STEP-1:POKEV+1,Y-40:POKEV+3,Y:POKEV+23,B:IFB=1 THENB=3:NEXT:RUN
70 B=1:POKES+23,(Y/15)-2:POKES,Y/6:NEXT
80 DATA 16,0,0,124,0,0,254,0,8,254,32,28,254,112,62,130,248,62,56,248,62,84,248
90 DATA 62,124,248,60,124,120,57,109,56,57,109,56,35,109,136,15,109,224,63,125
100 DATA 248,254,0,254,0,108,0,20,0,80,0,0,16,0,8,56,32,28,124,112,62,124,248,28
110 DATA 56,112,28,56,112,8,56,32,0,16,0,4,128,5,128,3,129,21,3,23,1,39,1,40,8,0
120 DATA 220,2,220,1,207,3,245,33,6
```

Bob Snader and David Snader
Baltimore, MD

\$357 Animated titles—This routine for the C-64 adds a special touch of magic to any Basic program by animating your title screens. The program creates two substrings from a user-defined title string and animates both characters from four directions. You may have as many lines in your title as desired, each specified in the N\$(X) array. However, there is one limitation. Each N\$(X) string must contain exactly 26 characters. If your string is shorter, just insert spaces on either side of the string.

```
10 REM ANIMATED C-64 TITLES - PATRICK GAINES
20 PRINT"(CTRL 8){SHFT CLR)"CHR$(14):POKE53280,0:POKE53281,0:A$="" :X=0
30 N$(0)="** DYNAMIC TITLE SCREEN **"
40 N$(1)="** FOR THE COMMODORE 64 **"
50 N$(2)=" CREATED BY PATRICK GAINES"
60 A=1:B=26:C=32:D=1:E=0:F=0:G=0:H=0:I=0:J=0:K=C:L=C:M=C:N=C:P=41:R=39
70 IFA>B THEN170
80 G=1263+E:H=1304-F:I=1903+E:J=1944-F:N1$=MID$(N$(X),A,D):N2$=MID$(N$(X),B,D)
90 IFN1$=A THENA=A+D:E=E+D:GOTO70
100 IFN2$=A THENB=B+D:F=F+D:GOTO70
110 POKEG,K:G=G+P:K=PEEK(G):POKEG,ASC(N1$)
120 POKEH,L:H=H+R:L=PEEK(H):POKEH,ASC(N2$)
130 POKEI,M:I=I-R:M=PEEK(I):POKEI,ASC(N1$)
140 POKEJ,N:J=J-P:N=PEEK(J):POKEJ,ASC(N2$)
150 IFG>I THENA=A+D:B=B-D:E=E+D:F=F+D:K=C:L=C:M=C:N=C:GOTO70
160 GOTO110
170 FORS=0TO2:SYS59626:NEXT:X=X+1:IFN$(X)<>" " THEN60
180 REM ** PLACE REST OF PROGRAM HERE **
```

Patrick Gaines
Gastonia, NC

\$358 The white hole—This neat little subroutine prints any 38-character message from the center of the screen to the edges in a very fancy way. The printing sequence is just the opposite of a black hole. The first and last letters are printed, then the second and next-to-last letters, and so on, working outward from the center.

```

10 REM C-64/C-128 WHITE HOLE - ERIC J. BRUN
  O
20 PRINT"{SHFT CLR}":POKE53280,0:POKE53281,
  0
30 M$="{CTRL 9}{CTRL 3}{3 SPACES}THIS IS TH
  E 'WHITE HOLE' TRICK{3 SPACES}":PL$="{HO
  ME}{8 CRSR DNs}":GOSUB100000
40 M$="{CTRL 9}{CTRL 2}INSERT NEW TEXT IN L
  INES 30,40,& 50.":PL$=PL$+"{2 CRSR DNs}"
  :GOSUB100000
50 M$="{CTRL 9}{COMD 7}{6 SPACES}PRESS ANY
  KEY TO CONTINUE.{4 SPACES}":PL$=PL$+"{2
  CRSR DNs}":GOSUB100000
60 GETA$:IFA$=""THEN60
70 END
100000 L=LEN(M$):MI=38-L/2:FORI=1TOLEN(M$)-1
  9
10010 PRINTPL$SPC(MI)LEFT$(M$,I)RIGHT$(M$,L
  -(L-I)):MI=MI-1:NEXT:RETURN

```

Eric J. Bruno
Shirley, NY

\$359 Songs in the key of C—The C-128's SID chip has great music capabilities and the ease of programming provided by Basic 7.0. There is one slight drawback, though. If you program a song using the default note values in SID, your song will be in the key of F instead of in the key of C. That means you cannot accompany your 128 on the keyboard or piano without first transposing the music.

The accompanying program will play the default scale, then a C scale using the Sound command to demonstrate the difference between the two scales.

```

1 REM GIVE ME A C - NEAL SMITH - C-128
10 TEMPO 8
20 PLAY"V104T7U15X0CDEFGABO5C":SLEEP1
30 READA:SOUND1,A,30:IFA=0THENEND:ELSEGOTO3
  0
40 DATA4297,4822,5412,5724,6429,7217,8102,8
  578,0

```

Neal Smith
Rochester, NY

\$35A From the Grand Ole Opera—My program plays "The Marines Hymn," which was written in 1868 for an opera by Jacques Offenbach. I've converted it to C-128 Basic. I hope you enjoy it.

```

10 REM GRAND OPERA C-128 - JESSE B BROWN
20 TEMPO 31:PLAY"V104T0U15X0":PLAY"V203T0U1
  5X0"
30 A$="V104.QEV203.QEQFV104QFMHGV203HFHFV10
  4HGMQFV203QF.HDV104.HDMWCV203WEMV104HBV2
  03$HFHRV104.QCQEM"

```

```

40 B$="V104HGV203HGHGV104HGMHGV203HGHGV104H
  GMWGV203HEV202HEMV104HGV202HAHAV104.QEQF
  MHGV203HCHCV104HGM"
50 C$="V104QFV203QD.HFV104.HDMWCV203HCV202H
  BMV104HCV202QAQGV104.QCIEMHGV203HGHGV104
  HGMHGV203HFHFV104HGM"
60 D$="V104.HGV203HCO2HBV105QCMO4HGV202HAHG
  V104.QEIFMHGV203HCHCV104HGQFV203QD.HFV10
  4.HDMWCV203HCO2HBM"
70 E$="V104HCV202HAHGV105.QCO4IBMHAV202HFO3
  HCV104HFMHGV203HFO2HFV104HFM.HGV203HCO2H
  BV104QAMHGV202HAHGV105.QCO4IBM"
80 F$="V104HAV202HFO3HCV104HFMWAV203HFHCMO4
  V203HGV104WGV203HBMV104QGV203$QBV104QRV2
  03QRV104.QCV203HRV104IEM"
90 G$="V104HGV203HGHGV104HGMHGV203HFHFV104H
  GM.HGV203HCO2HBV105QCMO4HGV202HAHGV104.Q
  EIFM"
100 H$="V104HGV203HCHCV104HGMQFV203QD.HFV10
  4.HDMV203.QCV104WCO2IGQAQGV203HGV202
  QCQRV104QRO5QCV202QCQRV104QRM"
110 PLAYA$:PLAYB$:PLAYC$:PLAYD$:PLAYE$:PLAY
  F$:PLAYG$:PLAYH$

```

Jesse B. Brown
Eunice, LA

\$35B Shake it up, baby!—Try running this short and simple program for an earth-shaking surprise:

```

10 REM SHAKE IT UP - HAZMAN HALID - C-64
20 POKE53280,0:POKE53281,0:INPUT "FRICTION
  (1-7)":F
30 FOR R=1 TO 200:PRINT "SHAKE";:NEXT
40 FOR R=0 TO 15 STEP F:POKE53270,R:NEXT
50 FOR R=15 TO 0 STEP -F:POKE53270,R:NEXT
60 GOTO40

```

Input a 1 for a sliding effect or a 7 for a good shake! To smooth the slide, just add :POKE 56325,1 to the end of line 20. Press the run/stop key to quit and run/stop-restore to exit the program.

Hazman Halid
West Malaysia

\$35C A plane joy—The following program creates an airplane and stores it as sprites. You can then move the airplane in three directions with a joystick in port 2. This program could provide the groundwork for a simple game.

```

10 REM C-128 PLANE JOY - DAVID ZAJAC
15 GRAPHIC1
20 SCNCLR 1:BOX 1,1,1,29,29
30 DRAW1,5,11TO5,12
40 DRAW1,4,12TO9,12TO8,11
50 DRAW1,24,12TO24,14
60 DRAW1,21,11TO24,11TO24,9TO23,8TO25,8
70 DRAW1,21,10TO23,8
80 BOX 1,23,10,24,12:BOX1,22,14,25,15:BOX1
  3,13,4,14
90 DRAW1,6,10TO9,10TO10,11TO11,11TO12,12TO2
  0,12

```


Magic

Listing continued.

```
100 DRAW1,21,15TO18,15TO17,14TO11,14TO10,15
    TO5,15
110 DRAW1,11,16TO17,16
120 SSHAPE$,3,7,25,30:SPRSAVE$,1:SPRITE1,1
    ,1
130 BOX0,0,0,30,30,,1:MOVSPR1,150,100:DO
140 IFJOY(2)=6THENMOVSPR1,260 #10
150 IFJOY(2)=7THENMOVSPR1,270 #10
160 IFJOY(2)=8THENMOVSPR1,280 #10
170 IFJOY(2)>127THENMOVSPR1,0 #0:ELSE:LOOP
```

David Zajac
Alhambra, IL

\$35D No-fade colors—This program lets you select screen colors to replace the standard blues on the C-64. The program remembers the new colors until the computer is reset or turned off. Use F1, F3 and F5 to cycle through the text, background and border colors, respectively. Printed text will always be visible because the program automatically sets a selection to the next color if text and background colors are the same.

When you've selected your colors, press F7. If all has gone well, the run/stop-restore combination won't destroy your colors, and even if you run a program that changes the colors, they'll return when the program ends.

```
10 REM NO-FADE C-64 COLORS-J.R.CHARNETSKI
20 FORJ=1TO23:READN:T=T+N:NEXT:RESTORE
30 IFT<>108865THENPRINT"DATA ERROR":END
40 READM,B,T,W:POKET+4,128:X=15:Y=7:S=X
50 PRINT"{SHFT CLR}":FORJ=MTOM+N:READA:POKE
    J,A
60 NEXT:POKET,X-1:POKEB,X-1:POKEB+1,Y-1
70 PRINT"{HOME}{2 CRSR DNs}F1 TEXT":IFX>STH
    ENX=0
80 PRINT"{CRSR DN}F3 BACKGROUND":IFY>STHENY
    =0
90 PRINT"{CRSR DN}F5 BORDER":IFZ>STHENZ=0
100 PRINT"{CRSR DN}F7 COLORS OK"
110 GETA$:IFA$=""THEN110
120 IFA$="{FUNCT 1}"THENPOKE T,X:X=X+1
130 IFA$="{FUNCT 3}"THENPOKE B+1,Y:Y=Y+1
140 IFA$="{FUNCT 5}"THENPOKE B,Z:Z=Z+1
150 IFX=YTHEN120
160 IFA$<>"{FUNCT 7}"THEN70
170 POKEM+1,PEEK(B):POKEM+6,PEEK(B+1)
180 POKEM+11,PEEK(T):POKET+4,0
190 POKEM+232:POKEW+1,203:PRINT"{SHFT CLR}"
    :NEW
200 DATA 52200,53280,646,770,169,014,141
210 DATA 032,208,169,006,141,033,208,169
220 DATA 014,141,134,002,076,131,164,017
```

Joseph R. Charnetski
Dallas, PA

\$35E Foreign exchange—Here's a nifty little program that prints a conversion chart for U.S. and foreign currency. Look in the business section of your newspaper

for the foreign exchange rates. Find what one U.S. dollar is worth in a foreign currency and enter that value at the prompt. The program then prints the values for one dollar to \$50. To print higher amounts, change the value in the loop in line 50.

```
10 REM C-64/C-128 FOREIGN EXCHANGE - CHAD J
    ONES
20 INPUT "$1.00 US=";C1:C2=1/C1:C1=C1*100
30 OPEN4,4
40 PRINT#4,"{4 SPACES}AMERICAN ${2 SPACES}=
    {2 SPACES}FOREIGN{2 SPACES}${5 SPACES}FO
    REIGN ${2 SPACES}={2 SPACES}AMERICAN $"
50 FORT=1TO50
60 A=INT(T*C1+.5)/100:F=INT(T*C2*100+.5)/10
    0
70 PRINT#4,"{6 SPACES}"T"{10 SPACES}"A"{10
    SPACES}"T"{10 SPACES}"F
80 NEXT:CLOSE4
```

Chad Jones
San Gabriel, CA

\$35F New Okimate 10 manual—If you bought one of the first Okimate 10 color printers, here's good news: The manufacturer has revised the original operator's manual.

Information that was confusing is much clearer in the new edition, and details for using some popular word processors have been added.

To determine which version of Okimate 10 you have, look at the manual's cover. The original manual is called *Printer Handbook* and has a photograph on the cover. The new manual has been retitled *Printer Manual* and has a drawing on the cover.

I called Okidata's toll-free number (1-800-OKIDATA), and they mailed the updated version to me.

C. Finke
Evansville, IN

\$360 Quiet, please—At power-up or after pressing the restore key or reset button on my C-128, I was getting background hum from the monitor speaker. I found that by typing CHR\$(7) or pressing CTRL-G, a short tone will sound, followed by silence. No more humming!

Rodney Sweeney
Montpelier, VT

\$361 Easier filenames—It is common practice to save long programs several times while typing them in. Each version is usually named "program#". Rather than add the number to the end of the name, try adding it to the beginning (e.g., "4program"). By doing so, you can load the file with the number and first few characters followed by a wild card (e.g., "4pro*") instead of typing the entire name and the number.

Save the final version without a number in it, and you can scratch all old versions with "S0:~program".

Jason Lee
Macomb, OK

\$362 Checking lines with C-128 Perfect Typist—To check programs entered without the 128 Perfect Typist, first load and run 128 Perfect Typist. Then enter the following line and press return:

```
10 REM CHECKING FOR C-128 PERFECT TYPIST -
   JOSEPH FAUST, JR.
20 REM ENTER LINE 30 WITHOUT LINE NUMBER
30 A$=CHR$(148):B$=CHR$(145):KEY7,CHR$(27)+
   "J"+A$+A$+A$+A$+"LIST"+CHR$(13)+B$+B$+B$
   +B$+CHR$(13)
```

Next, load the program you wish to check and type AUTO followed by the line number increment used in the program to be checked. List the first line of the program, move the cursor up to the listed line and press return. This will give you the checksum for that line followed by the line number for the next line. Press F7, and the next line will be listed, along with the checksum for that line followed by the next line number. If you continue to press F7, you can step right through the program. As a side benefit, pressing F7 without a line number lists the program.

Joseph V. Faust, Jr.
Lompoc, CA

\$363 Double-sided disaster—I wonder how many other new 1571 owners have erased a full side of perfectly good programs. This was a result of attempting to format the "flip side" using the Format Disk program included on the 1571 test/demo disk. The problem is, this program only formats disks as double-sided and thus erases whatever is on both sides of the disk.

The Format Disk program can be made safer and more versatile by deleting line 90 and adding the following four lines:

```
1 REM DOUBLE SIDE 1571 TEST/DEMO PROGRAM EN
  HANCEMENT - CHRIS MORRY
141 INPUT"SINGLE (S) OR DOUBLE (D) SIDED";S
   SS
142 IF SS<>"D"THEN OPEN 15,8,15,"UO>M0":CL
   OSE15:GOTO150
143 OPEN15,8,15,"U0>M1":CLOSE15
269 OPEN15,8,15,"U0>M1":CLOSE15
```

These minor changes let you choose single- or double-sided formats. Line 269 restores your 1541 to a 1571.

Criss Morry
Moncton, N.B.
Canada

\$364 Faster hi-res dumps—If you use a Cardco +G or G-Wiz interface, you may be experiencing some printing delays. The print buffer is so small on these interfaces that they are not able to quickly do hi-res printing. This can make printing with programs such as The Newsroom or Print Shop very time-consuming. A solution (other than a new interface) is a new ROM chip. Romco (PO

Box 18359, Wichita, KS 67218; phone 316-687-6502) has replacement ROM chips for the Cardco interfaces at a fraction of the cost of a new interface. The chips are simple to install and will speed printing by 1500%! I'm now using a replacement ROM chip for my printer interface, and it has put new life into my printing.

Jay Knott
Huntington Beach, CA

\$365 Which wire is which?—Did you ever want to disconnect just one device from your surge protector in order to move it from one place to another? Did you have to go through the tedious task of tracing the appropriate wire to the surge protector? Here's a trick that will make your task a little easier.

Almost everyone owns a label maker that churns out plastic stick-on labels. Attach to the wire or cable near the base of the plug a short piece of label with the device name printed on it. Then finding the plug will be a snap.

Eric Pickell
Palatine, IL

\$366 Hankey-Pankey—If your printer is like mine, it requires more than an 80-character line to set up the printer the way I like. This short set of printer commands eliminates the need to type that data each time you want a printout.

Add the lines shown below with line numbers lower than the first line number in your program. List the first few lines and move the cursor to the O in OPEN; then press the delete key until the O and the cursor are in the first column. Erase the REM statement in the next line the same way. Next, press return and—*voilà!*—your printer lists the program just the way you like it.

To avoid typing this line at the beginning of your old programs, use tip 5 described in Magic trick \$2E9 (May 1986). C-64 owners may have to use two lines because of the 80-character limit.

```
0 REM EASY C-64/C-128 HARDCOPY - LARRY PANK
  EY
4 REM OPEN1,4:PRINT#1,CHR$(27)"C"CHR$(66)CH
  R$(27)"N"CHR$(6):CMD1:LIST
5 REM PRINT#1,CHR$(12);:CLOSE1
```

Larry Pankey
Dana Point, CA

\$367 Printer stands—Here's how to get an inexpensive printer stand. You can use an old TV or microwave stand to hold your printer and paper. If it has wheels, it will be easy to move around. If it has only two bars for the top shelf, so much the better if your printer feeds from the bottom. The paper is stored on the bottom shelf. If you don't have a TV stand, scan the merchandise section of your newspaper's classified ads.

Chuck Moody
Milledgeville, GA ■

BONUS: RUN Script for 128 Owners

PLUS: Holiday Shopper's Guide

The Home User's Guide to **Commodore** Computing

CANADA \$3.95

U.S.A. \$2.95

RUN

December 1986 A CWC/I Publication

PUBLISH YOUR OWN...

- ▶ Newsletters
- ▶ Cards
- ▶ Banners

**Add Graphics
To Your
Disk Magazine**

**Join the Laser Printer
Revolution**

Generate Speech





By JIM BORDEN

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make output easier, faster, more exciting and enjoyable, send it to:

Magic
 RUN magazine
 80 Elm St.
 Peterborough, NH 03458

If your trick is accepted for publication in the column, you will receive a colorful RUN Magic T-shirt.

\$368 "Holladay" snowflakes—This program produces a series of snowflakes by drawing triangles in different colors and rotating them through 360 degrees. Run this program on the C-128 in 40-column mode.

```
10 REM SNOWFLAKES - HARMON K. HOLLADAY
20 GRAPHIC 1,1:COLOR 0,1:COLOR 4,1
30 FOR I=1 TO 5:Z=Z+1
40 IF Z>16 OR Z<1 THEN Z=2
50 COLOR 1,Z
60 X=X+10:IF X=>300 THEN X=10
70 Y=Y+10:IF Y=>200 THEN Y=10
80 A=A-10:IFA<=10 THEN A=300
90 B=B-10:IFB<=10 THEN B=200
100 FOR J=0 TO 360 STEP 30
110 CIRCLE 1,(X+A)/2,(Y+B)/2,ABS(A-X)/2,ABS
    (B-Y)/2,,,J,120
120 NEXT J
130 SCNCLR:GOTO 30
```

Harmon K. Holladay
 Dodge City, KS

\$369 Improving 128 Perfect Typist—While typing in a lot of Data statements, using F1 for DATA and F7 for commas, I wondered if the plus, minus and decimal point keys on the keypad could be redefined. This would considerably improve typing speed for Data statements

and commands such as Circle. I found that you can copy the keyboard matrix into RAM and change the keys any way you like. My program changes the decimal point key on the keypad to a comma and changes the minus key to duplicate the definition of the F1 key.

The lines are numbered to work with C-128 Perfect Typist. To use my program with it, be sure to remove :NEW from the end of line 60. Then add the lines below and save the program. You can also use this program without 128 Perfect Typist.

```
70 :REM '. '=, '- '=F1 (DATA) - TODD BAILEY
80 KEY1,"DATA ":BASE=3072:PH=INT(BASE/256):
    PL=BASE-PH*256
90 BANK15:FORX=0 TO 88:REM COPY OLD MATRIX
100 POKE BASE+X,PEEK(64128+X):NEXT
110 POKE830,PL:POKE831,PH:POKEBASE+82,44:PO
    KEBASE+74,133:NEW
```

Todd Bailey
 Sharonville, OH

\$36A Ultra hi-res string art—Here's a program I originally typed in from the *VIC-20 Super Expander Programmer's Guide*. I modified it to work with the C-128 Ultra Hi-Res module (RUN, February 1986). It draws two ever-changing lines that swirl around on the screen. This program is simply fun to watch, especially if you have an RGBI monitor.

```
10 REM ULTRA HI-RES STRING ART-JEFF GOODE
20 FAST:TRAP230:DIMA%(200,3):@CLR,0:FORL=1T
    O5
30 SC=INT(RND(1)*16+1)
40 CH=INT(RND(1)*16+1):IFCH=SC THEN 40
50 @GRAPHIC,SC,CH
60 X=INT(RND(1)*1280/2)
70 Y=INT(RND(1)*400/2)
80 X1=INT(RND(1)*320*2)
90 Y1=INT(RND(1)*100*2)
100 C1=0:C2=0:FORM=0 TO 200
110 IFC1<1 THEN C1=5+INT(RND(1)*10):RE=INT(RN
    D(1)*3)+1
120 IFC2<1 THEN DX=INT(RND(1)*41)-20:DY=INT(R
    ND(1)*41)-20:DA=INT(RND(1)*41)-20
```


Magic

```
130 IFC2<1 THEN DB=INT(RND(1)*41)-20:C2=15+INT(RND(1)*10)
140 X=X+DX:Y=Y+DY:X1=X1+DA:Y1=Y1+DB
150 IF(X<0)OR(X>639) THEN DX=-DX:X=X+DX*2
160 IF(Y<0)OR(Y>199) THEN DY=-DY:Y=Y+DY*2
170 IF(X1<0)OR(X1>639) THEN DA=-DA:X1=X1+DA*2
180 IF(Y1<0)OR(Y1>199) THEN DB=-DB:Y1=Y1+DB*2
190 C1=C1-1:C2=C2-1
200 @DRAW,A%(M,0),A%(M,1),A%(M,2),A%(M,3),0
210 @DRAW,X,Y,X1,Y1,1:A%(M,0)=X:A%(M,1)=Y:A%(M,2)=X1:A%(M,3)=Y1
220 NEXT:NEXT:SLEEP5
230 @TEXT:HELP:END
```

Jeff Goode
Burlington, CT

\$36B Lo-Res screen dumps on the 1526—If you're having problems making low-resolution screen dumps with your 1526, here's a simple solution. With normal line spacing, there's a gap after each line printed. The space-setting feature controls the number of steps between lines of print. The default is six lines per inch, but that can be changed with this line:

```
OPEN6,4,6:PRINT#6,CHR$(21):CLOSE6
```

A value of 21 reduces the number of steps sufficiently to remove the gap between lines. The printer will remain in this step-reduced state until it is reset or turned off.

Cameron E. Currie
Winnipeg, Manitoba, Canada

\$36C Kaypro CP/M disks—There are many public domain CP/M programs available that can be used with the C-128 and 1571 drive. While loading a disk formatted for Kaypro II, the prompt KAYPRO IV appeared on the screen. To get the Kaypro II format, press the cursor-right key, and the disk will load correctly.

Lonnie Williams
Orange, CA

\$36D NLQ and Paperback Writer—To switch to Near-Letter Quality mode on the Star line of printers with Paperback Writer, select a pitch of 11. The printer file for the Gemini does not allow you to turn off the NLQ mode with a pitch command, but pitch 20 is not defined. So if you wish, you can load the file and define pitch 20 to ESC,"B",5. Then save the file back to disk. This will turn off NLQ and revert to the type you were using before NLQ was selected.

Greg Simpson
Murrayville, IL

\$36E Data on side 2 of the 1571—The 1571 double-sided drive allows twice as much storage as a single-sided 1541 disk. However, once you have reached 664 or fewer blocks free, data saves to the disk are quite slow. It appears

that the drive writes a block, then checks for the next free block, writes another block, and so on. If you have several long programs on the first side, you can reduce these delays by copying the long programs to the back of the disk and then scratching the original version. The data files will now be written, at normal speed, to the empty blocks on the first side of the disk.

Richard D. Young
Greenwood, N.S., Canada

\$36F Variable-size graph paper—There are times when you need graph paper for different applications. This program gives you the number of squares you need. Some applications might include an 8 × 8 grid to create custom characters for your printer, a 24 × 21 grid for sprite design, or maybe you want to make your own crossword puzzle. This program is designed for the 1526 printer, but could easily be adapted to other printers.

```
10 REM VARIABLE GRAPH PAPER-DAN PRICE
20 INPUT" {SHFT CLR} HOW MANY SQUARES ACROSS"
;X: IFX>40 THEN X=40
30 INPUT" HOW MANY SQUARES DOWN";Y
40 OPEN4,4:OPEN6,4,6
50 A$="{SHFT O}{SHFT P}":B$="{SHFT L}{SHFT
@}"
60 A=A+1:IFA=Y+1 GOTO120
70 PRINT#6,CHR$(20)
80 FORI=1 TO X:PRINT#4,A$;:NEXT
90 PRINT#6,CHR$(20)
100 FORI=1 TO Y:PRINT#4,B$;:NEXT
110 PRINT#6,CHR$(20):GOTO60
120 CLOSE6:CLOSE4:END
```

Dan Price
Athol, MA

\$370 C-128 no-run safety—The shift/run-stop key combination will load and run the first program on a disk, which is a nice feature, but it can become a nightmare. Sooner or later, when you least expect it, you will accidentally press that combination while writing a program, and—poof!—there goes the program!

To disable shift/run-stop, type in and run the following program line, which erases the command that's built into location 4104:

```
10 POKE 4104,0:FORI=4159 TO 4164:POKEI,PEEK(I+9):NEXT
```

Don Harkness
Andover, KS

\$371 One for all—I do all my programming on one disk because of so much saving, loading and saving again. This can be hard on a disk, so it's wise to verify the program after saving it. When the program is finished, I transfer it to the disk in my normal software library. This habit keeps my disks in good condition.

Mike Dryja
Washington, MI

\$372 Function key restore—If you want to restore the default function keys on the C-128, just type in this line: BANK15:SYS49425. It will restore the function keys, the

Continued on p. 126.

Magic

From p. 12.

tab settings and clear the screen. It also changes 40/80-column modes, so you'll have to use ESC X to get back to the screen on which you typed the SYS.

Ron Sardo
Sugarloaf, PA

\$373 Saving function keys—I program the C-128 function keys constantly while I'm programming in order to perform short routines. Of course, when I power down, I'm back to the default values and, until lately, I've had to type my redefined values back in again.

The C-128 uses memory locations 4096-4351 for the function keys. Preprogramming my function keys, saving that memory block to disk and having it autoboot frees me from typing them over again.

To save the programmed-key work area to disk, type:

```
BSAVE"filename",B0,P4096 TO P4352
```

Load it back in with BLOAD"filename".

Daniel M. Bickford
FPO San Francisco, CA

\$374 Back-side bonus—While using a C-64 word processor, I found that my data disk was getting full. After trying the mode-selection program found in the 1571 manual, which enables you to lock the drive into 1571 Double-sided mode, I found that loading the word processor would unlock the drive, or, in some cases, refuse to load. To overcome this, load and run the word processor, go into Disk mode and type U0>M1. The word processor will now be able to access the back side of the disk, provided that it has been formatted as a double-sided disk.

This trick works on Easy Script, RUN Script and Fontmaster II. It will probably work with any word processor that allows you to send commands to your disk drive.

Barry Estes
Westbrook, ME

\$375 C-128 Beethoven—Here's a program that creates a C-128 version of a piece of music actually written by Beethoven.

```
10 REM 128 BEETHOVEN-JESSE B BROWN
20 TEMPO16:ENVELOPE 6,3,8,5,9,2
30 A$="V103T6V15X0HGIAIGIAIBQGO4IGIDIDO3IBI
   BIGO4HCO3IBIAIB"
40 B$="O4ICO3QAO4IDIEIDO3IBO4ICO3IAHGIAIGIA
   IBO4HCIEIDIE#IFIGIDIEIC"
50 C$="O3IBO4ICO3IAHAQQRHAAO4ICO3IBIBO4ICTA
   IG#IFIEIDICO3HBO4IDICO3IBO4ICIEIDIBIAIG#
   IFIEIDIC"
60 D$="O3QBO4IG#IFIGIAIBQCI BO4ICIDICO3IAIBO
   4HDQDQDHDQDQBO5HDQDQDQ4HBHRHDQDQDQGO5Q
   DQR"
70 E$="O4#QFQRQQR03QGHGHWG"
80 PLAY A$:PLAY B$:PLAY C$:PLAY D$:PLAY E$
```

Jesse B. Brown
Eunice, LA

\$376 Random 3-D shapes—This program draws and erases several 3-D shapes in random sizes on the C-128.

```
1 REM 3D SHAPES-M. N. CARSWELL
2 COLOR0,1:COLOR1,2:COLOR4,1:GRAPHIC1,1:DO
3 FORJ=1TO15:X=160:Y=100
4 XR=INT(RND(1)*30)+80:YR=INT(RND(1)*30)+60
5 IFD=0THEND=15:ELSEIFD=15THEND=45:ELSEIFD=
   45THEND=60:ELSEIFD=60THEND=90:ELSEIFD=90T
   HEND=15
10 COLOR1,3:FORI=XRTO0STEP-(XR/6):CIRCLE1,X
   ,Y,I,YR,,,D:NEXT
11 COLOR1,8:FORI=YRTO0STEP-(YR/6):CIRCLE1,X
   ,Y,XR,I,,,D:NEXT
12 FORI=XRTO0STEP-(XR/6):CIRCLE0,X,Y,XR,I,,
   ,D:NEXT
13 FORI=XRTO0STEP-(XR/6):CIRCLE0,X,Y,I,YR,,
   ,D:NEXT:NEXT:LOOP
```

M. N. Carswell
Eatonton, GA

\$377 Mechanical safety—Have you ever accidentally hit a key you did not want? The solution is to cover the key with a small box that's a bit taller than the key. Any heavy paper or light cardboard will do.

Mary E. Wilson
Clearwater, FL

\$378 C-128 GETspeed—Using GET\$ in a Do Loop is an easy way to check a sequential file. It can be slow, however, if the file is a long one. Here's a version of a Do Loop read that speeds things up considerably. Enter the name of the file when prompted. You can pause the printing with the no-scroll key. By changing the value of B in line 20, this program should run on any Commodore computer. Of course, you won't be able to stop the listing with the no-scroll key.

```
10 REM GETSPEED - EDWARD B. SULLIVAN
20 B=2816:FORI=BTOB+54:READT:POKEI,T:CK=CK+
   T:NEXT
30 IFCK<>7503THENPRINT"ERROR"
40 DATA 160,0,185,0,2,240,3,200
50 DATA 208,248,152,162,0,160,2,32
60 DATA 189,255,169,5,168,162,8,32
70 DATA 186,255,32,192,255,162,5,32
80 DATA 198,255,32,207,255,32,210,255
90 DATA 32,183,255,240,245,32,204,255
100 DATA 169,5,32,195,255,96,00
110 INPUT "FILENAME";F$:SYS B
```

Edward B. Sullivan
Branson, MO

\$379 Terminal garbage—In calling 1200-baud bulletin boards, I was usually plagued with all sorts of garbage when communicating with a system that supported the higher speed. I was always told that it was "line noise," and that there was not much I could do about it. I discovered that the problem only occurred during a long scroll, such as a main menu or a long message. The conclusion? Well, to put it simply, in a Commodore there is a memory buffer in the channel the modem uses. At 300 baud, most programs can empty this buffer as fast as it's filled. At 1200 baud you're communicating four

Magic

times as fast. If your terminal program isn't emptying the buffer as fast as it's filling up, it eventually overflows, and garbage results. My solution is to use a terminal program that runs fast enough to handle the speed. Some programs I recommend are: VIP Term XL, AutoCom III and a public domain program by Chris Kaiser called XMoBuf.7.31.

James R. Carson
The Woodlands, TX

\$37A C-128 graphs—The following short program will show how easy it is to create graphs in your programs. As set up, the height is determined by a random number. In your own program, this will be determined by your statistics.

To save you the trouble of dividing the scale, I used the variable that determines the height of each graph to tell it's magnitude. Placing it atop the appropriate bar identifies it nicely. The headings will be correlated to these also.

```

0 REM 7.0 GRAPHS - G. L. PENROSE
10 PRINT "{SHFT CLR}":GOSUB100:COLOR0,1:CHAR
  1,4,23:E$="{COMD M}":F$="{COMD @}"
20 FORI=1TO22:PRINT$"{CRSR UP}{CRSR LF}";:
  NEXT:CHAR1,5,23
30 FORI=1TO88STEP4:PRINTF$"{CRSR UP}{CRSR L
  F}";:NEXT:CHAR1,6,23:G$=F$:FORI=1TO30:PR
  INTG$;:NEXT
40 CHAR1,12,1,"CYAN":CHAR1,18,1,"GRN":CHAR1
  ,24,1,"YEL":CHAR1,30,1,"RED"
50 CHAR1,12,24:A$="{CTRL 9}{CTRL 4}{CRSR UP
  }{2 SPACES}{2 CRSR LFs}":FORI=1TOX:PRINT
  A$;:NEXT:PRINT"{CTRL 2}{CRSR LF}{CRSR UP
  }{CTRL 0}"X;
60 CHAR1,18,24:B$="{CTRL 9}{CTRL 6}{CRSR UP
  }{2 SPACES}{2 CRSR LFs}":FORI=1TOY:PRINT
  B$;:NEXT:PRINT"{CTRL 2}{CRSR LF}{CRSR UP
  }{CTRL 0}"Y;
70 CHAR1,24,24:C$="{CTRL 9}{CTRL 8}{CRSR UP
  }{2 SPACES}{2 CRSR LFs}":FORI=1TOZ:PRINT
  C$;:NEXT:PRINT"{CTRL 2}{CRSR LF}{CRSR UP
  }{CTRL 0}"Z;
80 CHAR1,30,24:D$="{CTRL 9}{CTRL 3}{CRSR UP
  }{2 SPACES}{2 CRSR LFs}":FORI=1TOW:PRINT
  D$;:NEXT:PRINT"{CTRL 2}{CRSR LF}{CRSR UP
  }{CTRL 0}"W;
90 COLOR5,2:CHAR1,1,1:GETKEYK$:RUN
100 X=INT(RND(1)*21)+1:Y=INT(RND(1)*21)+1
110 Z=INT(RND(1)*21)+1:W=INT(RND(1)*21)+1:R
  ETURN
  
```

G. L. Penrose
Oakville, Ontario, Canada

\$37B More snow—Here's another snowmaker for the C-128. The technique used here is the same as that used to draw a star. The program will run until you press the stop key.

```

10 REM MORE SNOW - JIM BORDEN
20 COLOR0,1:COLOR1,2:X=RND(-TI):DIM X%(50),
  Y%(50)
30 DO:R=INT(RND(1)*90)+10:NS=INT(RND(1)*10)
  *2+5:GRAPHIC 1,1:Z=0
  
```

```

40 AN=2*{PI}/NS:FORX=AN TO 2*{PI}+.1 STEP A
  N :Z=Z+1
50 X%(Z)=R*SIN(X)+160.5:Y%(Z)=R*COS(X)+100.
  5:NEXT
60 LOCATE X%(NS),Y%(NS):S=INT(NS/2)-INT(RND
  (1)*4):N=S:IFS=0THEN60
70 WIDTH2:IFNS/S=INT(NS/S)THEN60
80 FORX=1TONS:DRAW 1,RDOT(0),RDOT(1) TO X%(
  N),Y%(N)
90 N=N+S:IFN>NSTHENN=N-NS
100 NEXT:SLEEP2:COLOR1,RND(1)*15+2:LOOP
  
```

Jim Borden
Carlisle, PA

\$37C Space Caverns—One day, while piloting your mining cruiser back home, your ship begins to tremble and shake. Your cruiser has entered the dreaded Space Caverns!

When you run this C-64 program, the number you see in the upper-left corner of the screen is the cavern width. To make your journey more difficult, use the F1 key to decrease the width and then press any other key to begin.

To pilot your ship, press the cursor-down key to go left or cursor-right to go right. The game is over if you hit the cavern wall, and your score will be displayed. For every cavern width less than nine, you get 150 points, and for every star you pass, you get one point.

Good luck, space cadets!

```

0 REM SPACE CAVERNS 64 - MIKE GEBIS
1 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,128,
  0,1,192,0,3,231,0,1,199,128,8,134,144
2 DATA 5,255,160,3,60,192,7,60,224,7,60,224
  ,3,255,192,1,255,128,3,153,192,4,24
3 DATA 32,8,24,16,16,24,8,120,60,30,0
4 V=53248:POKEV+21,255:POKE2042,13:K=9:POKE
  198,0
5 FORN=832TON+62:READQ:POKEN,Q:NEXT:POKE532
  80,0:POKE53281,0:PRINT"{SHFT CLR}{CTRL 2}
  "K;:H=1984
6 POKEV+5,170:POKEV+41,1:PRINTTAB(16)"SPACE
  CAVERN":WAIT 198,1:GETA$:Z=15
7 FORD=1TO23:PRINT:NEXT:IFA$="{FUNCT 1}"THE
  NK=K-1:S=S+150:PRINT"{SHFT CLR}"K;:GOTO6
8 X=160:F=PEEK(V+31)
9 S=S+1:GETA$:IFA$="{CRSR RT}"THENX=X+5
10 J=26:IFA$="{CRSR DN}"THENX=X-5
11 U=INT(3*RND(1)+1):IFX>255THENX=255
12 C=42:IFU=1THENZ=Z+1:IFZ>JTHENZ=J
13 IFU=3THENZ=Z-1:IFZ<1THENZ=1
14 POKEV+4,X:POKEH+Z,K,C:POKEH+Z,C
15 PRINT:IFPEEK(V+31)=.GOTO9
16 PRINT"{SHFT CLR}YOU HAVE DIED! SCORE="S:
  PRINT"PRESS [SHIFT] TO CONT":WAIT653,1:R
  UN
  
```

Mike Gebis
Bloomingdale, IL

\$37D Unicorn/Pegasus—The following C-64 program will produce an interesting sprite. Its magical appearance certainly fits this column!

```

10 REM UNICORN/PEGASUS - RAY PEREZ
20 POKE53280,0:POKE53281,0:PRINT"{SHFT CLR}
  "
30 FORS=832TO894:READT:POKES,T:NEXT
40 V=53248:POKE2040,13:POKEV+21,1
  
```



THE AMAZING VOICE MASTER[®]

SPEECH SYNTHESIS—VOICE RECOGNITION
plus a whole lot more!



Your computer can talk in your own voice. Not a synthesizer but a true digitizer that records your natural voice quality—and in any language or accent. Words and phrases can be expanded without limit from disk. Speech Editor program alters or improves sounds.

And it will understand what you say. A real word recognizer for groups of 32 words or phrases with unlimited expansion from disk memory. Speech playback and word recognition can work together. **Have a two way conversation with your computer!**

Easy for the beginning programmer with new BASIC commands. Machine language programs and memory locations for the more experienced software author.

Exciting Music Bonus lets you hum or whistle to write and perform. Notes literally scroll by as you hum! Your composition can be edited, saved, and printed out. You don't have to know one note from another in order to write and compose!

Based upon new technologies invented by COVOX. One low price buys you the complete system. Includes a host of sample programs! In addition, you will receive periodic information about speech technology, applications, new products, up-dates, and user contributions. You will never find a better value for your computer.

ONLY \$89.95 includes all hardware and software.

Available from your dealer or by mail. When ordering by mail add \$4.00 shipping and handling (\$10.00 foreign, \$6.00 Canada).

The Voice Master is available for the Commodore 64, 128, Apple IIc, IIe, II+, and Atari 800, 800XL, 130XE. Specify model when ordering. Apple II+ (with 64K) owners must have joystick adapter. Available from Covox at only \$9.95.

Apple IIe and II+ owners: Enhance speech quality and music capabilities with optional Sound Master hardware card. Installs in slot 4 or 5. Available separately for \$39.95 with demo software, or order with Voice Master for only \$119.95 (saves \$10 when ordered together).



DEMO SPEECH DISK AVAILABLE New! An introduction to Covox speech. The \$5 disk gives several general vocabularies that you can use in any of your own programs. Sample programs include a talking keyboard, calculator, clock, and more. English, French and German selections. Samples of level 1 and 2 speech editing. 28 page booklet included. Price is \$5 including postage (\$7 outside North America). Check, money order, or cash only. SPECIFY COMPUTER BRAND.

For telephone demo, additional information, or prompt service for credit card orders (except \$5 talking disk).

CALL (503) 342-1271 
Call or write today for complete product information.



COVOX INC. (503) 342-1271
675-D Conger Street, Eugene, OR 97402
Telex 706017 (AV ALARM UD)

Magic

Listing continued.

```
50 POKEV+39,12:POKEV+1,150:POKEV,160
61 DATA 003,243,224,001,025,016,000,140
62 DATA 200,056,098,072,108,026,136,196
63 DATA 010,144,143,233,096,031,255,224
64 DATA 031,255,240,031,255,249,031,255
65 DATA 250,031,255,254,027,015,220,025
66 DATA 006,092,017,002,084,017,002,092
67 DATA 017,001,076,017,002,064,017,012
68 DATA 064,008,136,032,012,192,048,000
```

Ray Perez
Henderson, NV

\$37E C-128 spirals—The program listed below will draw randomly shaped spirals.

```
10 REM MAGIC SPIRALS - MICHAEL E RANDELL
20 GRAPHIC1,1
30 BG=INT(RND(1)*15)+1
40 BC=INT(RND(1)*15)+1
50 FG=INT(RND(1)*15)+1:IFFG=BGTHEN50
60 COLOR1,FG:COLOR0,BG:COLOR4,BC
70 IN=INT(RND(1)*250)+1
80 AN=INT(RND(1)*359)+1
90 R=INT(RND(1)*9)+2:T=INT(RND(1)*15)
100 DO UNTIL XR>100
110 XR=XR+R:AN=AN+T
120 CIRCLE 1,160,100,XR,,,AN,IN
130 LOOP:SLEEP2:CLR:GOTO20
```

Mike Randell
Coloma, MI

\$37F 50-Hz clocks—While the C-64 Magic clock (trick \$2E6, May 1986) will keep time in the United States, it loses ten seconds per minute in countries where the electrical frequency is 50 Hz. To get the correct time in such countries, the following command is necessary:

POKE 56334,PEEK(56334) OR 128

This command can be entered in Direct mode before loading Magic Clock or in a line before line 200.

The same command must be included in any program using the T.O.D. clock timing (e.g., VIP terminal).

Harry Getliffe
Durban, South Africa

\$380 A better wait—C-64 programmers often use a Get loop in their programs to give the user time to select a key. A shorter and easier way is to wait for the shift, Commodore or control key by using the statement

WAIT 653,X

where X is replaced with 1 for the shift key, 2 for the Commodore key and 4 for the control key. The numbers can be added together to wait for one of several keys to be pressed. For example, to wait for the shift or control key to be pressed, use a value of 5 for X. Be sure to tell the user which key to press.

Also note that the run-stop key has no effect on the Wait statement, but will incur a Break error with Get.

Denis Boisvert
Saint John, N.B., Canada

Magic

\$381 Listen while you work—Typing programs is a long and tedious job. I've found a way to enter programs four times as fast, virtually error free and with considerably less eye strain.

First, I slowly read the program into my tape recorder. Then I play it back, typing the program as I listen. It's especially useful for entering long programs with many Data statements.

Kenneth S. Ascher
Virginia Beach, VA

\$382 Faster CP/M disk copies—Here's a useful tip to use on the C-128 in CP/M mode. Making copies of CP/M disks with PIP.COM is time-consuming, for the program copies only a single file at a time. To speed things up a bit, I've used a fast commercial back-up program (Copy II 64/128) to copy Commodore (GCR-formatted) CP/M disks in a short time. You should watch out for several things, though. Only Commodore-formatted disks can be copied. Also, only single-sided disks can be copied unless the program you use specifies it is designed for double-sided disks. If your program offers a "whole disk" copy, select it instead of a "BAM" copy, since CP/M puts its directory in a place where Commodore computers won't find it!

Joe Malloy
Clinton, NY

\$383 No-knock loads—When loading commercial software, the 1541 disk drive often makes a loud chattering noise. This is usually caused by copy-protecting. Over a period of time this may cause the drive to go out of alignment.

If entered in Direct mode before you load the commercial program, the following one-line program usually stops this from occurring. This line is about 90% effective, but in cases where it does not work, it will not interfere with the proper loading of the commercial program.

```
Ø REM NO KNOCK - RUSSELL MCCRORY  
1 OPEN1,8,15:PRINT#1,"M-W"CHR$(106)CHR$(0)C  
HR$(1)CHR$(133):CLOSE1
```

Russell McCrory
Gallatin, TN

\$384 Word-processing database—If you don't have a database program, a word processor can sometimes make a good substitute. For example, you can put a list of addresses and phone numbers in one word processor document. Each name, address and phone number should be listed together. When you need to look for an address or phone number, use your word processor's search function to locate the person's name. You'll automatically find the address and telephone number too. If you don't find the person's name, you'll know that you should add the information to the file and resave the document.

Mark Bersalona
Philadelphia, PA ■



COMPUTER SPECIALTIES INC. P.O. Box 1718 Melbourne, FL 32902-1718

7705 Technology Drive Melbourne, FL 32904-1189

Technical Support (305) 725-6574

Order Entry:

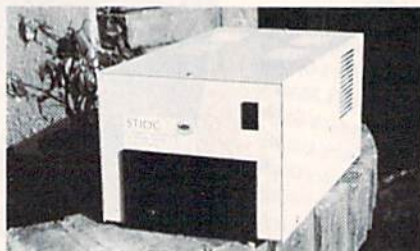
Florida 1-800-341-4368

National 1-800-523-8275

HARD DRIVE ST10C

Originally
\$1595.

NOW
\$895.

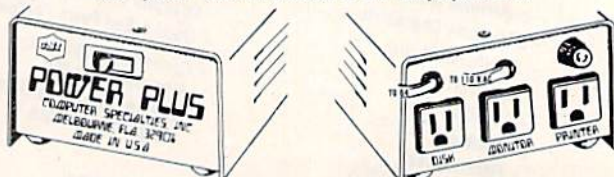


Hundreds in use in schools, Bulletin Boards, Businesses

- Serial - IEEE ports
- Format Protect Switch
- Device 8 & 9 Select Switch
- Auto Back-up & Initialize Switch
- As easy to use as your 1541, 8050, or 9090 CBM Drives.
- 10 Meg Storage DOS in ROM
- Uses Standard CBM Commands
- Comprehensive Users Manual
- 90 day Manufacturers Warranty

C-64 "POWER PLUS"

A Combination Surge Protector & Power Supply
for your Commodore 64 Equipment



Dealer Inquiries Invited

- 3 Outlets with Surge, Over-Voltage, Over-Current and Over-Temperature Protection.
- A complete Power System for your CBM 64 or 64C.
- One Switch turns on ALL equipment.
- Repairable and External Fuse. **\$59.95**

**CSI manufactured Serial to IEEE,
and IEEE to Centronics Interface.**

IEEE - Serial Cables, IN STOCK.

C64/C128 Multi Use Switch \$149.95

PLUS: RUN's Annual Index

The Home User's Guide to **Commodore** Computing

U.S.A. \$2.95

RUN

January 1987 A CWC/I Publication

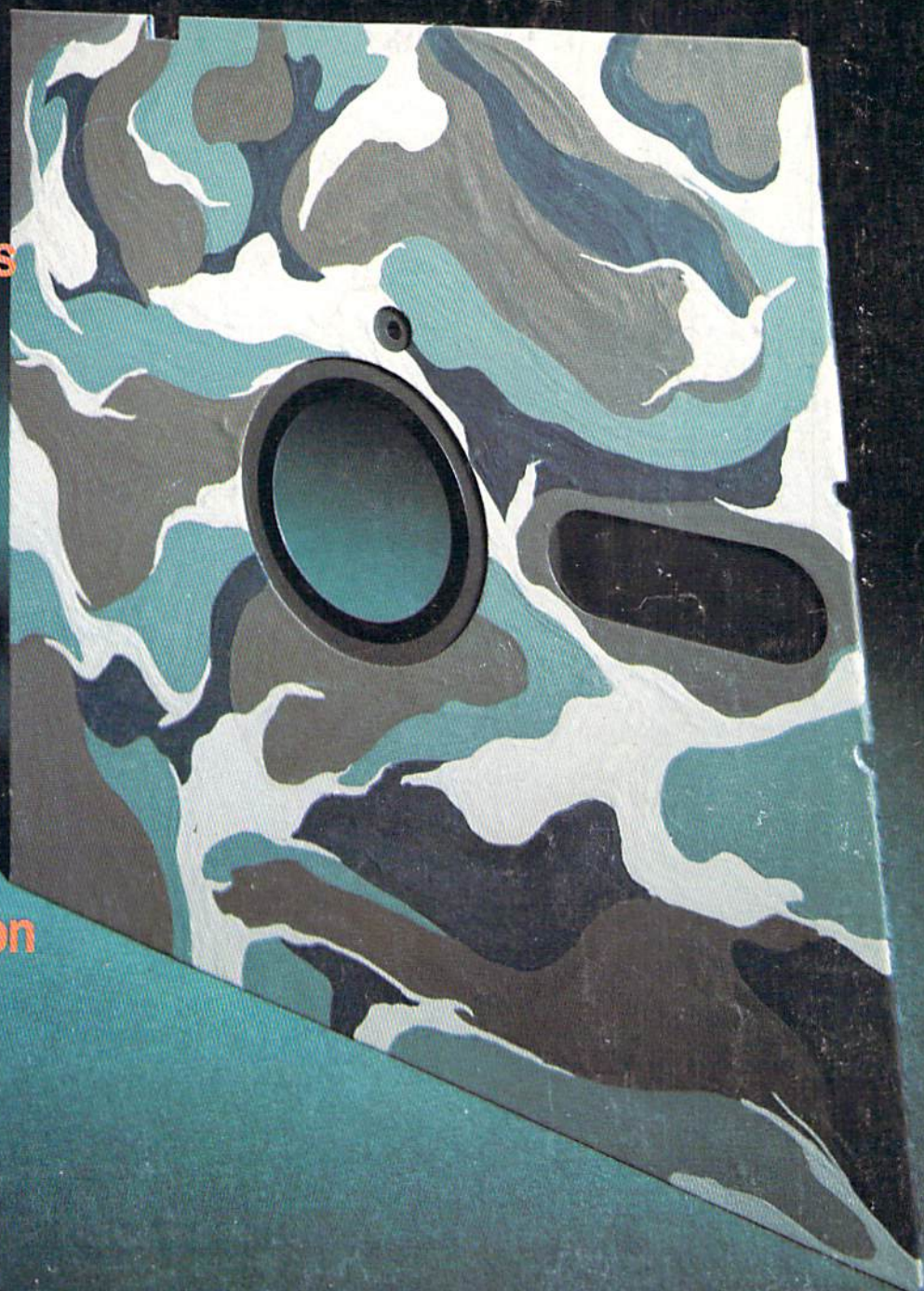
THE SOFTWARE WAR

Users & Developers
Seek a Truce

Desk Calendar
For Your 128

Introducing...
Easy Applications

C-64 Baseball Action





By JIM BORDEN

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

*Magic
RUN magazine
80 Elm St.
Peterborough, NH 03458*

If your trick is accepted for publication in the column, you will receive a colorful RUN Magic T-shirt.

\$385 Musical staff modification—For those who use a non-Commodore printer, you might want to modify the Musical Staff Maker program (trick \$2FB, July 1986). Substitute a 95 for the CHR\$ value in line 120. This is the ASCII underline character. Or use a 45 (the minus sign), which will work on all printers, but with a small space between characters.

Peter J. Forgacs
Britton, MI

\$386 Christmas Magic—Season's Greetings! The holiday season is again upon us, and in keeping with the spirit of Christmas, here's a little Yuletide magic. Type in the program, place your monitor on the fireplace mantle or in the bay window, and settle back in your favorite recliner with a hot toddy to watch the action!

```
1 REM CHRISTMAS MAGIC - RICHARD PENN
5 POKE53280, .:POKE53281, .:PRINT "{SHFT CLR}"
:FOR T=1 TO 23:PRINT TAB(RND(1)*39)" {CTRL 1}.
:NEXT
10 A$="*****":S=19:PRINT "{HOME} {CRSR
DN}"TAB(12)" {CTRL 2} MERRY CHRISTMAS! {CRSR
DN}" {CTRL 6}":FOR T=1 TO 11 STEP 2
20 FOR L=1 TO 3:PRINT TAB(S)LEFT$(A$,T):NEXT T:S=
S-1:NEXT:PRINT TAB(19)"* {CRSR DN} {CRSR LF
}* {CRSR DN} {3 CRSR LFs}*****"
```

```
30 S=.:DIMF(138):FORT=1024 TO 2023:IF PEEK(T)=
42OR PEEK(T)=46 THEN F(S)=T+54272:S=S+1
40 NEXT:S=139:T=15:L=1
50 POKEF(S*RND(L)),T*RND(L)+L:GOTO 50
```

Richard Penn
Montreal, Quebec, Canada

\$387 C-64 instant recall—The Screen Saver program listed below is useful for saving lo-res text screens (such as a note to yourself or a disk directory) to the C-64's memory for later recall, even while you're running another program. Type in the listing and make a copy before you run it. Save a screen to memory by entering SYS 49152. Recall the screen from memory with SYS 49184. Your screen will stay in memory until it is overwritten by another screen or until you turn off the power.

```
0 REM C-64 SCREEN SAVER - CHAD AMES
10 FOR I=49152 TO 49215:READ A:POKE I,A:NEXT N
EW
20 DATA 169,0,162,0,189,0,4,157
30 DATA 80,195,189,255,4,157,79,196
40 DATA 189,254,5,157,78,197,189,253
50 DATA 6,157,77,198,232,208,229,96
60 DATA 169,0,162,0,189,80,195,157
70 DATA 0,4,189,79,196,157,255,4
80 DATA 189,78,197,157,254,5,189,77
90 DATA 198,157,253,6,232,208,229,96
```

Chad Ames
Essex Junction, VT

\$388 C-64 machine language saver—An important feature lacking in Basic 2.0 is the ability to save a block of memory directly to tape or disk. But, by using the built-in Save routine and changing the pointers that define its upper and lower limits, you can easily modify it to do this. The following program emulates the BSave command. It lets you save any section of memory to tape or disk and is usable independently or as a subroutine. Files saved in this manner must be loaded with the LOAD "filename",8,1 syntax. Remember to type NEW after loading to reset some memory locations if this form of load is used in Direct mode.

By using this technique, sprites, custom characters, hires screens and machine language programs can be saved

Magic

directly from memory, eliminating the need for cumbersome Data statements. For example, to save the contents of the cassette buffer, you would use starting and ending addresses of 828 and 1019, respectively.

```
Ø REM C-64 ML SAVER - RICHARD PENN
1Ø INPUT "STARTING ADDRESS";SA
2Ø INPUT "ENDING ADDRESS";EA:EA=EA+1
3Ø INPUT "FILENAME";F$
4Ø INPUT "(T)APE OR (D)ISK";D$:D=8:IFD$="T"
   THEN D=1
5Ø SYS57812F$,D,1:HB=INT(SA/256):POKE193,SA
   -HB*256:POKE194,HB
6Ø HB=INT(EA/256):POKE174,EA-HB*256:POKE175
   ,HB:SYS62957
```

Richard Penn
Montreal, Quebec
Canada

\$389 Cheat sheets—Many programs have important key commands on the keyboard that perform special functions. A good way to remember these keys is to list them on an index card. This simple trick saves me both time and effort, and I can now spend time at the keyboard that would otherwise be taken up in fiddling through my manuals for the information.

Adam Jackson
Sault Ste. Marie, Ontario
Canada

\$38A C-128 input windows—The Commodore's Input routine can easily mess up your carefully planned screen format. How many times have you accidentally pressed a cursor key, only to send any additional input off to another part of the screen? You can avoid unnecessary delays by setting up a small window on the screen, as demonstrated in the following example:

```
1Ø REM WINDOW INPUT - LEE SEMEL
2Ø S=1Ø:REM WIDTH OF WINDOW
3Ø PRINT"{2 HOMES}":REM WINDOW=ENTIRE SCREE
   N
4Ø PRINT"{SHFT CLR}YOUR ANSWER"CHR$(27)"M"
5Ø WINDOW Ø,1,S+1,1:REM WINDOW ON SECOND LI
   NE
6Ø INPUT A$:PRINTCHR$(27)"L"
7Ø PRINT"{2 HOMES}"
```

The variable S establishes the width of the window, and the escape codes on lines 30 and 50 disable and enable the screen scroll, respectively. This will keep your text from going too far astray.

Lee Semel
Edison, NJ

\$38B Stuck on KoalaPad—I've got a simple solution for those of you who are tired of hunting down the stylus for your KoalaPad every time you need to use it—attach it to the pad with Velcro. Put the soft, furry part of the Velcro on the stylus and the hooked part on the pad, right behind

the buttons. The buttons provide additional protection for the stylus.

Chance Agrella
Prescott, AZ

\$38C C-128 key-repeat control—If you've upgraded to a C-128 from a C-64, you might prefer the keys on the C-128 to repeat as the C-64's keys do. Use POKE 2594,128 (the default) to make all the keys repeat; use POKE 2594,0 to make only the space bar, INST/DEL and cursor keys repeat; use POKE 2594,64 to prevent all keys from repeating.

David C. McKenzie
Charlotte, NC

\$38D Renumber with order—Programmers like to simplify the debugging-and-improving process they use when developing their programs by adding a "table of contents" in REM statements at the beginning of programs. The contents give the starting line number of each routine and subroutine, which they can refer to when necessary. However, when they use the Renumber command to renumber the listing, the numbers in the table of contents don't change; you need to go into the listing and renumber them yourself.

My way changes all that, by replacing the word REM each time it appears in the table of contents with IF TI<0 GOTO X:. Variable X represents the line number you want changed. This will save you a lot of time when changes need to be made after renumbering. For example, if your original REM statement was:

```
10 REM START OF SORT ROUTINE LINE 500
```

your revised line is:

```
10 IF TI<0 GOTO 500:START OF SORT ROUTINE
```

This line changes the part of the listing—the REMs—that doesn't affect the program's performance, by incorporating it into the executable part of the program, so that the references are changed when you use the Renumber command. It still won't affect your program's performance, and now you'll always know where the routines start, no matter how often you renumber your program.

Jack A. Ryan
El Dorado, AR

\$38E Number tutor—This simple program for the C-128 amazes children and helps them to think of a number in relation to another.

```
Ø REM NUMBER TUTOR - MARY HUBBARD
1Ø COLORØ,7:COLOR4,5:PRINT"{SHFT CLR}{3 CRS
   R DNS}THINK OF A NUMBER BETWEEN 1 AND 1Ø
   Ø"
2Ø PRINT"AND {SHFT I} WILL GUESS YOUR NUMBE
   R!":H=1ØØ:L=1:T=Ø
3Ø DO:M=INT((H-L)/2)+L:T=T+1
4Ø PRINT"{3 CRSR DNS}IS IT"M"?":CHR$(7):PRIN
   T"{2 CRSR DNS}MY GUESS IS (H)IGH, (L)OW
   OR (R)IGHT?"
5Ø GETKEY S$:IFS$="H"THENH=M:ELSE IF S$="L"
   THEN L=M:ELSE IF S$="R"THEN EXIT:ELSE GO
   TO5Ø
```

Continued on p. 104. →

Magic

From p. 12.

```
60 LOOP
70 SCNCLR:TEMPO15:PLAY"V106T9U15X05QCGO6IC
  CCO5IGGGQEGECCEO6ICCCO5IGGGEEQEGEC"
80 PRINT"I GUESS IT IN ONLY"TRIES!":PRINT
  "WANT TO TRY AGAIN?":PRINT"(Y)ES OR (N)O
  "
90 GETKEY$:IFS$="Y"GOTO10:ELSE END
```

Mary Jo Hubbard
Carpentersville, IL

\$38F GEOS printer files—If you use GEOS, then you know that the Commodore MPS-801 printer is selected as the default printer driver when you boot up your original master GEOS disk. This is fine if you're using the 801, but if you use a different printer, then each time you boot up, you have to go through a printer-selection process with the mouse to access the correct printer driver.

You can forever rid yourself of this time-wasting routine by changing the order of the printer drivers on the master disk so that the driver pertaining to your printer is selected as the default. This is easy to do. Enter the desktop and turn to the page with the printer drivers. Click the arrow on the MPS-801 driver, wait a few seconds and click again. You should see a ghost image of the MPS-801 icon. Drag this ghost to the border of the directory pad and click the mouse to drop the icon on the border. Repeat the procedure with the printer of your choice.

You should now have both icons. Click on the icon of the driver you want first (the new default printer driver), and carry the ghost back to the directory notepad. Click the mouse, and the new driver will be placed in the first open spot on the directory. Then replace the 801 driver in the same way. Now *your* printer driver is the default driver. Take care, as you are working with the GEOS master disk!

John Plzak
Milwaukee, WI

\$390 Loading GEOS letters and pictures—I've discovered a quick way to load a geoWrite or geoPaint document. First I select the appropriate icon on the desktop notepad for the document I want. Then I double-click on the document file to load it. Of course, geoWrite or geoPaint must be on the disk, unless you have a multidrive system, in which case GEOS will automatically check both drives for geoWrite or geoPaint. This is much faster than opening geoWrite or geoPaint and then loading in your document.

John Plzak
Milwaukee, WI

\$391 Caps-lock-Q fix—Some of you have already discovered that you cannot get an uppercase Q with the caps lock key on the C-128. You can fix the bug by entering my one-line program.

```
10 REM CAPS-LOCK-Q FIX - JERRY KIRK
20 FAST:BANK15:FORJ=0TO88:POKE6333+J,PEEK(6
  4484+J):NEXT:POKE840,189:POKE841,24:POKE
  6395,209:SLOW
```

Jerry Kirk
Heiskell, TN

\$392 C-64 thinking sounds—You can enhance your games and other interactive programs with sound effects. My C-64 Thinking program will give you the impression that your computer is mulling over a strategic move or working with a command you've just entered. Try it also in a program as a subroutine immediately before output to the screen or following user input.

```
490 REM C-64 THINKING - JOSEPH CHARNETSKI
500 S=54272:POKE S+6,240:POKE S+5,34
510 POKE S+24,15:POKE S+4,21
520 FOR I=1TO30
530 POKES+1,RND(1)*180:POKE S,RND(1)*20
540 FOR J=1TO60:NEXT:POKE S+4,0:REM RETURN
```

Joseph R. Charnetski
Dallas, PA

\$393 Make it easy on yourself—Make a hard copy of the different fonts and type styles available in GEOS. It's much easier to select the style and size this way.

Ada D. Kirkman
Mt. Pleasant, SC

\$394 Line marker—When I type in a program from RUN, I use a small sheet of Scotch Post-it pad to mark my place and to help my eyes follow the line I'm entering. This magic paper easily sticks to my magazine without damaging it, and I can restick the paper under the next line, then the next, and so on. Now I never skip lines while typing in a program.

John Kim
Spring Valley, NY

\$395 Economical printer stand and desktop space—If you need more desk space around your printer, place a low-cost letter tray upside down and set the printer atop it. Store the fanfold paper underneath the letter tray—you've just found yourself almost 100 square inches of additional desk space.

Michael Lenoski
Tucson, AZ

\$396 Lowercase CHARacters—Have you ever wanted to use lowercase text on-screen in the C-128's 40-column (hires) mode? Well, now you can, by simply including a CHR\$(14) before the text you want to type. Look at the example below: the line will print an uppercase "M" and lowercase "agic":

```
0 REM LOWER CASE CHAR - CARLOS CASTELLANOS
1 :
2 REM ----DELETE ALL BUT LINE 10 TEXT----
3 :
10 CHAR 1,0,0,CHR$(14)+"{SHT M)AGIC",1
```

Carlos A. Neri Castellanos
Guadalajara, Jalisco, Mexico

\$397 Mysterious errors revealed—For all of you who've ever gotten an error in a "perfectly good" line containing a Read statement (and who hasn't?), here's some magic for

you. These errors usually result from poking a value greater than 255 (an Illegal Quantity error) or typing the letter O for a 0 in a data line (a Type Mismatch error). To ferret out the culprit, type in the appropriate line below:

For the C-64, VIC-20, Plus/4 and C-16: PRINT PEEK(63)+PEEK(64)*256
For the C-128: PRINT PEEK(65)+PEEK(66)*256

Now list the line number printed on the screen; you'll find the error in that line.

Jim Borden
Carlisle, PA

\$398 Basic directory—There will be times when you'll need to call up the disk directory while your program's running. Include this short subroutine in your programs, and you'll have instant access to the directory.

```
10 REM BASIC DIRECTORY - LUTHER W BRISKY
90 OPEN 5,8,0,"$":GET#5,A$,A$
91 GET#5,A$,A$:IFA$=""THENCLOSE5:GOTO96
92 GET#5,B$,L$
93 LN$=STR$(ASC(B$+CHR$(0))+ASC(L$+CHR$(0))
  )*256):PRINTLN$ " ";
94 GET#5,A$:PRINTL$;A$;:IFA$=""THENPRINT:G
  OTO91
95 GOTO94
96 END : REM OR RETURN FOR SUB
```

Luther W. Brisky
Vancouver, WA

\$399 A safe Save and Replace routine—Whenever I type in a long Basic program, I always begin the listing with this time-saving routine. Then, when I'm ready to update the program on disk or quit for the day, I just enter RUN 2. The routine will scratch the previously saved version and save the latest version. When the entire program is entered and tested, I add :STOP to the end of line 2, then I run line 2 one last time. Finally, I delete lines 1-3 and save the finished program in the usual way.

```
0 REM SAFE SAVE+REPLACE - CHRISTINE N CHARN
  ETSKI
1 GOTO [FIRST LINE #]
2 N$="PROGRAM NAME":PRINT"SCRATCH";:OPEN1,8
  ,15,"S0:"+N$:CLOSE1
3 PRINT" AND SAVE.":SAVE N$,8:END
```

Christine N. Charnetski
Plains, PA

\$39A Extra F keys—Did you know that you can add two function keys to the eight already on the C-128? The help key and the shift/run-stop combination can be redefined as function keys with the SYS commands in the listing below.

```
0 REM EXTRA F-KEYS - SHAWN K SMITH
10 BANK15:SYS DEC("60EC"),,8,,,"NO RUN *"
20 BANK15:SYS DEC("60EC"),,9,,,"DON'T HELP"
```

You can substitute anything you wish between the quotes, including CHR\$, in place of the strings given in these examples.

Shawn K. Smith
The Bronx, NY

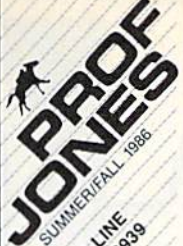
PROFESSIONAL HANDICAPPING SYSTEMS

Professor Picks Football™
\$99.95; with win/loss power ratings \$149.95; Professional Series™ \$199.95

Expanded Lottery/Lotto Analysis
Lottery: 3-4 digits \$79.95; Lotto: max. of 99 digits \$99.95; Enhanced Lottery/ Lotto \$129.95

PC-3 Portable Computer (4k)
Choice of Thoroughbred/Greyhound/Trotter Gold Edition™ software. \$249.95

Model 100 Portable Computer (32k)
Choice of Thoroughbred/Greyhound/Trotter Gold Edition™ software with Master Bettor™ \$649.95



ORDER LINE
(208) 342-6939

THOROUGHBRED
GREYHOUND
TROTTER
LOTTERY/LOTTO
FOOTBALL
BASKETBALL
OFFICE HOURS
M-F 8 AM - 5 PM
SAT 9 AM - 1 PM
(Mountain Standard Time)

FREE CATALOG
1940 W. STATE
BOISE, IDAHO 83702

VISA
AMEX

PROFESSIONAL S E R I E S

PROFESSIONAL SERIES™ (Tho/Grey/Trot)
The all new Professional Series™ represents the most advanced handicapping software available.

Analysis Module™
Complete bet analysis highlights this basic Professional Series™ module. Full 50 tracks/kennels/etc. \$249.95

Factor Value/Multiple Regression Module™
Factor Value Weighting highlights this addition module™ \$149.95

Data Base Manager Module™
Automatic storage of last 11 races highlights this module. (\$99.95 with Factor Value Module) \$149.95

GOLD EDITION™ (Tho/Grey/Trot)
The classic Gold Edition™ from Prof. Jones offers flexibility, results, and ease of use.

Gold Edition™	\$159.95
Enhanced Gold Edition™	\$199.95
Limited Gold Edition™	\$299.95
Ultra Edition™	\$399.95

Handicapper's Bulletin Board now available
VHS Training Tapes now available

Terms: Free shipping all software. Add \$6.00 COD / \$6.00 UPS Blue / \$9.00 Out-of-country / ID residents add 5% / 3 weeks personal checks / cash price only add 2% Visa, MC, AMEX. Prices subject to change.

Circle 74 on Reader Service card.

THE AMAZING VOICE MASTER®

**ENTER
THE FINAL
FRONTIER
OF
MAN-TO-MACHINE
COMMUNICATIONS**



There is nothing else like it. Voice Master gives both speech output and voice recognition with this single hardware product! Your voice controls programs, or home appliances, robots, and more with spoken commands. Verbal response back gives status, verifies, or requests your reply! Speech output and recognition patterns are recorded in with your voice. Or use the voice of your friend, boss, teacher, mother, even the family pet! Programming is simple with new commands added to BASIC. A music bonus program lets you write and compose musical scores simply by humming the tune. Unlimited applications for fun, education, and commercial use. Design your own programs for profit. Speech and recognition quality unsurpassed by even the most sophisticated machines. Only Covox provides this high-tech marvel at a price less than most common peripherals.

The Covox Voice Master comes complete with all hardware and software for only \$89.95. (Add \$4 shipping and handling for USA, \$6 Canada, \$10 overseas.) Available for Commodore 64/128, Apple II, II+, IIc, IIe, Atari 800, 800XL, 130 XE. Specify when ordering. Visa, MasterCard phone orders accepted.

Call or write for FREE Voice Master Intopak and special combination package offers.



COVOX INC., DEPT. RN
675-D Conger Street • Eugene, Oregon 97402 • U.S.A.
Area Code (503) 342-1271 • Telex 706017 (Av Alarm UD)

Circle 300 on Reader Service card.

RUN JANUARY 1987 / 105

PLUS: 64 Database Update

Two New GEOS Enhancements

The Home User's Guide to Commodore Computing

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.20

RUN

February 1987 A CWC/I Publication

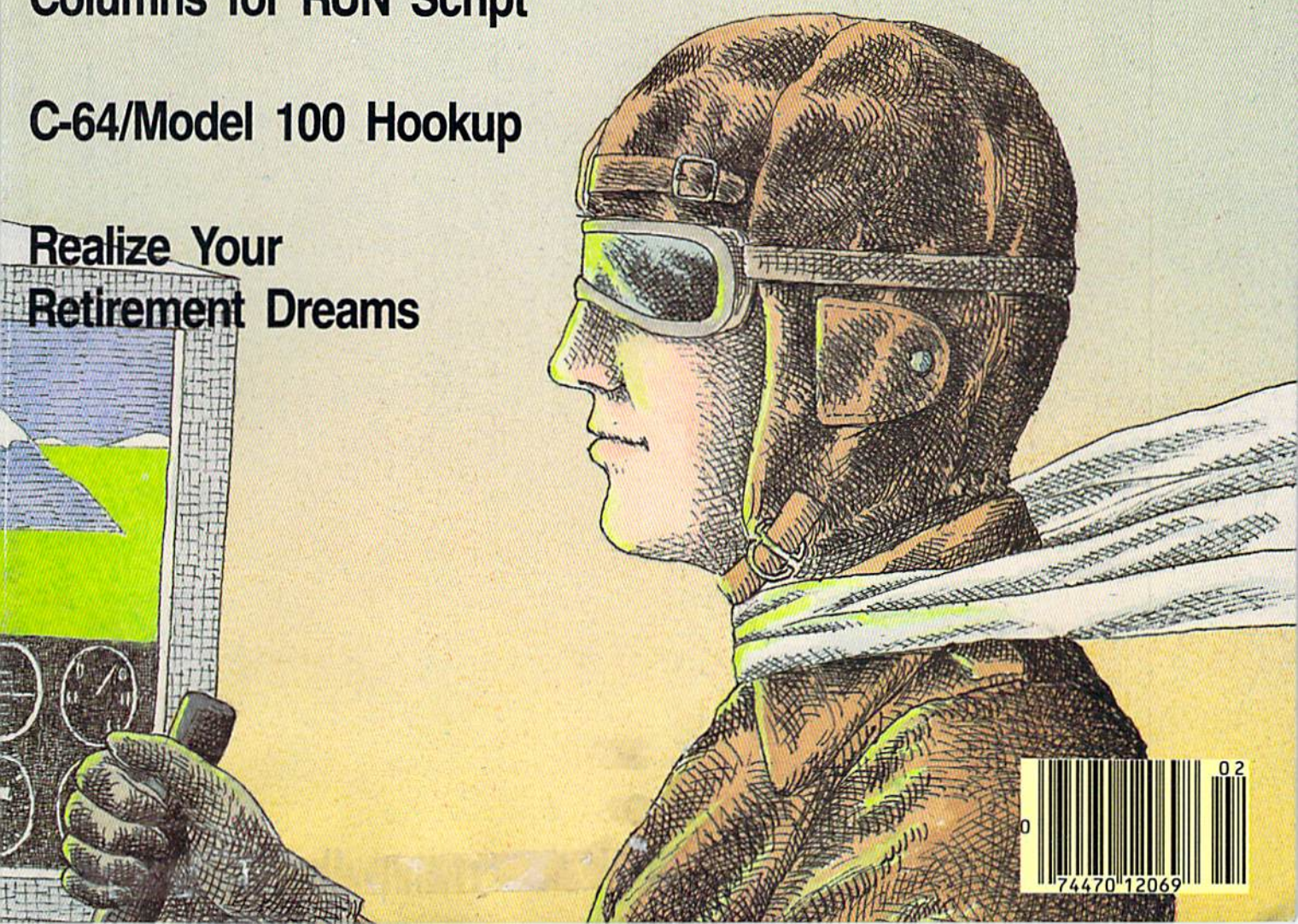
Flight Simulation

Take Off with Your C-64

Columns for RUN Script

C-64/Model 100 Hookup

**Realize Your
Retirement Dreams**





By JIM BORDEN

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computer system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

If your trick is accepted for publication in the column, you'll receive a colorful RUN Magic T-shirt.



Animate sprites and create a mini word processor with Poke commands; copy machine language files; print screen and color memory maps; merge DFReport and DFMail, and more.

\$39B PET-to-ASCII—Have you discovered to your chagrin that non-Commodore computers do not appreciate receiving PETASCII character codes sent by modem? Try using this short program to convert your sequential text files to standard ASCII before you send them to one of those computers.

```

0 REM PET-TO-ASCII - GREG DIXON
10 OPEN2,8,2,"SOURCEFILE,S,R":OPEN5,8,5,"EN
   DFILE,S,W"
20 IFEX=64 GOTO 80
30 GET#2,Z$:Z=ASC(Z$):PRINTZ$;:EX=ST
40 IFZ>192 THEN IF Z<219 THEN Z=Z-128:GOTO6
   0
50 IFZ>64 THEN IF Z<91 THEN Z=Z+32
60 Z$=CHR$(Z):PRINT#5,Z$;
70 GOTO20
80 CLOSE2:CLOSE5:END
  
```

Greg Dixon
North Vancouver, B.C., Canada

\$39C C-128 restore disable—If you type in the Pokes

below, you'll never have to worry about accidentally using the run-stop/restore combination and risk losing important information:

POKE 792,51:POKE 793,255

Pablo M. Eder
Buenos Aires, Argentina

\$39D Byte-size sprite animation—In conventional sprite animation, several sprites, each showing a different stage of the given motion, are successively flashed on the screen. But you can also produce sprite animation with the Poke command to change individual bytes in the memory map of a given sprite. This will produce corresponding changes in the sprite as seen on the screen. The following routine shows one general approach:

```

10 REM BYTE-SIZE SPRITES-MARK AKSOY
20 FORI=1TO64:POKE16255+I,0:NEXT:REM CLEAR
   SPRITE
30 POKE 53248,200:POKE53249,200:POKE53287,7
   :POKE53281,0
40 POKE2040,254:POKE53271,1:POKE 53277,1:PO
   KE53269,1
50 FOR J=1TO200:RB=INT(RND(1)*64)+16256
60 POKERB,102:FORD=1TO15:NEXT D:POKE RB,0:N
   EXT
  
```

Line 20 pokes 64 zeros into the sprite map beginning at location 16256. Lines 30 and 40 set the sprite parameters for the "empty" sprite. You can flash on any pattern of bytes in this sprite. In this case, line 60 pokes 102 and then 0 into an address randomly chosen in line 50 and is repeated 200 times within loop J. You can use this pattern of blinking yellow bars as the exhaust of a rocket sprite or as an underwater shimmer effect if shown over a predrawn fish sprite. You can modify the above routine to yield numerous animated patterns with widespread applications, from simulating fire to enhancing the illusion of movement by other sprite objects. And it's all done byte by byte!

Mark Aksoy
Glenolden, PA

Magic

\$39E C-64 ML file copier—Copying machine language files is a bit more difficult than copying Basic programs: They must be loaded with the ,8,1 or ,1,1 syntax. The utility I've developed transfers most ML files from disk to disk (or tape) without having to know the starting or ending addresses. Program operation is straightforward; just answer the prompts. The source is the medium from which you load the original, and destination is the medium where you want the copy saved. In addition, the utility displays the starting and ending address of the ML file being copied.

```
10 REM 64 ML FILE COPIER-RICHARD PENN
20 PRINT"(SHIFT CLR){CRSR DN}{CTRL 9}INSERT
SOURCE DISK/TAPE AND HIT RETURN"
30 GETA$:IFA$<>CHR$(13)GOTO30
40 INPUT"{2 CRSR DNs}ML FILENAME";F$:IF F$=
""GOTO40
50 INPUT"{CRSR DN}SOURCE:{6 SPACES}{CTRL 9}
T{CTRL 0}APE OR {CTRL 9}D{CTRL 0}ISK";D$
:SD=8:IFD$="T"THENS=1
60 INPUT"{CRSR DN}DESTINATION:{CTRL 9}T{CTR
L 0}APE OR {CTRL 9}D{CTRL 0}ISK";D$:DD=
8:IFD$="T"THEND=1
70 PRINT"{2 CRSR DNs}LOADING "F$"...":POKE1
47,0:SYS57812F$,SD,1:SYS62631
80 IFSD=1THENS=PEEK(829):SH=PEEK(830):GOTO
100:REM TAPE
90 OPEN2,8,2,F$:GET#2,A$,B$:Z$=CHR$(0):CLOS
E2:SL=ASC(A$+Z$):SH=ASC(B$+Z$)
100 PRINT"{CRSR DN}"SL+256*SH"-PEEK(174)+2
```

```
56*PEEK(175)
110 PRINT"{2 CRSR DNs}{CTRL 9}INSERT DESTIN
ATION DISK/TAPE AND HIT"SPC(14)"{CTRL 9
}RETURN TO COPY"
120 GETA$:IFA$<>CHR$(13)GOTO120
130 PRINT"{2 CRSR DNs}COPYING "F$"...":SYS5
7812F$,DD,1:POKE193,SL:POKE194,SH:SYS62
957
140 INPUT"{2 CRSR DNs}DONE. COPY IT AGAIN (
Y/N)";A$:IFA$="Y"GOTO110
```

Richard Penn
Montreal, Quebec, Canada

\$39F C-64 programs on the C-128 II—Magic trick \$326 (September 1986) recommends using the C-128 mode to type in C-64 programs because of the 128's extra editing features and its faster disk access. The trick also states that the programs should load and run without trouble in C-64 mode.

The advice is good, with one proviso: Don't let any Basic 7.0 keywords creep into your "C-64" programs. Should that happen, the C-128 will reduce the keyword to a 128 one- or two-character token the C-64 will not recognize. The only way of knowing you have this problem is when the line causes an error and, if listed, will either be missing a word or contain strange characters. For example, if you enter FOR LOOP = ..., the C-128 will tokenize the (C-64) loop variable into a keyword token and will list in 64 mode as FOR CLOSE = ... You can simply edit the line in 64

Continued on p. 102.

POWERFUL ENOUGH TO COMPUTE OUR NATIONAL DEBT. YET IT COSTS SO MUCH LESS.

1 FILE: HOUSEHOLD BUDGET 2 3

YEAR: 1985	INCOME SOURCE	JAN	FEB
10	HUSBANDS NET PAY	3500	3500
11	WIVES NET PAY	2700	3100
12	NET DISABILITY	400	400
13	CONSULTING PROFIT	1500	2500
14	NATIONAL GUARD PAY	250	250
15	DIVIDENDS/INTEREST	1975	2125
16	OTHER	134	134
17	TOTAL MONTHLY INCOME	10459	14004

TRANSFER LOAD file:

Allow us to introduce the most powerful electronic spreadsheet in the Commodore world.

Multiplan®

This is the same intensely simple, staggeringly brilliant program over a million Apple and IBM owners count on.

And now it will count for you, on any 64 or 128.

Ironically, however, though we recently lowered the price of Multiplan, we actually increased its capabilities.

The enhanced version not only takes full advantage of the 128's expanded memory and 80 column screen.

Not only includes a *Quickstart* instruction manual.

And not only comes with 10 ready-to-go templates.

But it is the fastest load-in spreadsheet

you can buy. Which means in mere seconds you can check your checkbook. Take stock of your stocks. Or calculate your risks.

You can plan, budget, analyze, question, ponder, revise, estimate and forecast.

Just by doing little more than pressing a few keys.

In fact, there really isn't any kind of hardcore number crunching you can't do faster and easier with Multiplan at your control.

Whether you're managing a family of 4. A business of 50. Or a nation of 250 million. **EPYX®**



Multiplan and Microsoft are registered trademarks of Microsoft Corp.

Multiplan works beautifully on a budget.

Multiplan works beautifully on a budget.

DATE	DESCRIPTION	AMOUNT	BALANCE
1/1/85	OPENING BALANCE	1000.00	1000.00
1/15/85	PAYROLL	500.00	500.00
1/30/85	RENT	200.00	300.00
2/1/85	SALES	1500.00	1800.00
2/15/85	EXPENSES	100.00	1700.00
2/28/85	INCOME TAX	250.00	1450.00
3/1/85	CLOSING BALANCE		1450.00

Magic

From p. 12.

mode and save the program to cure this problem. Or, if you recognize the keywords as they are entered in 128 mode, just type a Z between the first two letters. Basic will ignore the Z but will *not* tokenize the keyword.

Robert Irving
Northridge, CA

\$3A0 Speedy C-128 sprites—My trick speeds up sprite animation on the C-128. By poking values directly into memory locations used by Basic to store speed information, a sprite can have a speed between 0 and 255. Enter this line in Direct mode to start a sprite moving:

```
SPRITE 1,1,1:MOVSPR1,45#15
```

Notice the speed of the sprite and then enter:

```
POKE 4478,35
```

This tells Basic to give the sprite a speed of 35. There is a limit to how fast a sprite can move without showing up at several locations on the screen at the same time. Try different values to see which work best for you. The memory locations needed to speed up the other sprites are as follows:

Sprite 1: 4478	Sprite 4: 4511	Sprite 7: 4544
Sprite 2: 4489	Sprite 5: 4522	Sprite 8: 4555
Sprite 3: 4500	Sprite 6: 4533	

David A. Dye
Phoenix, AZ

\$3A1 Long C-64 lines—There are obvious advantages in using a C-128 to develop C-64 programs. But I've got a useful trick you may not be aware of.

In 128 mode, you can type up to 160 characters on each program line. This is helpful with long data sections and conditional clauses, and it can lead to fantastic "one-liners."

Once you've finished developing your program, save it. Now comes the surprise. Load it in 64 mode—the program will run perfectly. Of course, such lines can then only be changed in 128 mode. You can also use this trick in reverse to edit long lines entered on a C-64 by using keyword abbreviations.

Gerhard Schilling
Hemet, CA

\$3A2 Solo labels—If you need to print just one address label and don't want to bother with loading the database, try this easy-to-use program. Just follow the prompts. Use the run-stop/restore combination when you're finished with the program.

Because this is an input/output program, you cannot use commas, colons or semicolons in your data unless you begin the text with quotes. You also have to set your own print tabs for the printer you have (see your printer manual for details).

```
10 REM ONE LABEL-MARK GALLOWAY
20 INPUT "{SHFT CLR}{CTRL N}{2 CRSR DNS}NAME
   {6 SPACES}";N$
```

```
30 INPUT"ADDRESS{3 SPACES}";AD$
40 INPUT"CITY/STATE";CT$
50 INPUT"ZIP CODE{2 SPACES}";ZP$
60 PRINT"{2 CRSR DNS}IS THIS CORRECT? (Y/N)
   "
70 GET A$:IF A$=""GOTO 70
80 IF A$="Y" GOTO 100
90 IF A$="N" GOTO 200
100 OPEN 3,4
110 CMD3:PRINT:PRINTN$
120 PRINTAD$:PRINTCT$"{2 SPACES}"ZP$
130 PRINT#3:CLOSE3:GOTO 200
```

Mark C. Galloway
Bedford Hills, NY

\$3A3 C-128 hi-res screen saver—The August Magic contains a trick (\$31A) that shows you how to save a text screen on the C-128. Until now, this utility couldn't save a hi-res screen.

First, draw your picture on the hi-res screen, and save it with:

```
BSAVE"screen",P7168 TO P16383
```

To recall it, set up the proper graphic mode with the Graphic command and type:

```
BLOAD"screen"
```

Voila!—there's your picture. Each picture will occupy 37 blocks on your disk.

Chad Oliver
St. Anne, IL

\$3A4 Universal note-maker—You can make a mini word processor by entering text as program lines. Use a Poke to remove the line numbers when you're ready to print out or to just display it on the screen. First type in your message just like a Basic program, with line numbers. Don't worry about syntax; just don't begin your lines with REM. The following line works with the C-64, VIC-20, Plus/4 and C-16, but you cannot use shifted characters in this "word processor" since Basic will ignore them.

```
POKE22,35:OPEN4,4:CMD4:LIST:PRINT#4:CLOSE4:POKE22,25
```

For the C-128, change the values to POKE24,37 and POKE24,27, respectively.

Mark A. Hermann
Park Ridge, IL

\$3A5 C-64 at first sprite—If you use sprites in your programs, you may have noticed that when you first display a sprite, it flashes momentarily below the position you have set and then corrects itself. This happens once to each sprite when it's initially displayed. To prevent this, use the following line at the start of your program:

```
10 POKE 53269,255:POKE 53269,0
```

This turns all eight sprites on and off, forcing the video chip to complete its initialization. Since the position registers point off screen initially, there is no visible effect, but when you're ready to display a sprite, it appears in the right place immediately.

Lou Goldstein
Flushing, NY

RUN is a publication of CW Communications/Inc. (CWCI), an International Data Group (IDG) company. CWCI is the world's largest publisher of computer-related periodicals, with more than 70 computer publications in 28 countries. 12 million people read one or more of CWCI's publications each month. Members of the CWCI group are connected by and contribute to the CW International News Service, offering the latest domestic and international computer news. Members of the group include: ARGENTINA'S Computerworld Argentina, PC Mundo; ASIA'S Asian Computerworld, Communications World; AUSTRALIA'S Computerworld Australia, Communications World, Australian PC World, Australian Macworld; AUSTRIA'S Computerwelt Oesterreich; BRAZIL'S DataNews, PC Mundo; CHILE'S Informatica, Computacion Personal; DENMARK'S Computerworld Danmark, PC World Danmark, RUN; FINLAND'S Tietoviikko, Mikro; FRANCE'S Le Monde Informatique, Distributique, Golden, InfoPC, Theoreme, Le Monde des Telecoms; GREECE'S Micro & Computer Age; HUNGARY'S SZT Computerworld, Mikrovilag; INDIA'S Dataquest; ISRAEL'S People & Computers Monthly, People & Computers Weekly; ITALY'S Computerworld Italia, PC World Magazine; JAPAN'S Computerworld Japan; MEXICO'S Computerworld Mexico; THE NETHERLANDS' Computerworld Netherlands, PC World Netherlands; NEW ZEALAND'S Computerworld New Zealand; NORWAY'S PC Mikrodata, Computerworld Norge; PEOPLE'S REPUBLIC OF CHINA'S China Computerworld; SAUDI ARABIA'S Arabian Computer News; SOUTH KOREA'S The Electronic Times; SPAIN'S Computerworld Espana, Commodore World, PC World Espana; SWEDEN'S Computer Sweden, Mikrodata, Svenska PC World; SWITZERLAND'S Computerworld Schweiz; UNITED KINGDOM'S Computer News, DEC Today, ICL Today, PC Business World; UNITED STATES' AmigaWorld, Boston Computer News, Computerworld, Digital News, 80 Micro, FOCUS Publications, inCider, InfoWorld, MacWorld, Micro Marketworld, Network World, PC World, Publish!, RUN; VENEZUELA'S Computerworld Venezuela, PC World Venezuela; WEST GERMANY'S Computerwoche, PC Welt, Computer Business, Run, InfoWelt.

Magic

\$3A6 Sidewinder—My one-liner scrolls a message (A\$) across the top of the screen, showing 36 characters at a time. Add a few blank spaces at the beginning of A\$ to more easily read the message.

```

0 REM SCREEN SCROLL-MIKE FRANDSEN
1 A$="{23 SPACES}LINE 10 IS A ONE LINER THA
  T WILL PRINT A$ AT THE "
2 A$=A$+"TOP OF THE SCREEN AND SCROLL THE M
  ESSAGE AS YOU READ IT.{2 SPACES}THE 50 CA
  N "
3 A$=A$+"BE CHANGED TO ALLOW A FASTER OR SL
  OWER DELAY.{2 SPACES}CURSOR DOWNS CAN BE
  "
4 A$=A$+"ADDED AFTER THE HOME TO MOVE THE M
  ESSAGE DOWN."
9 :
10 FORA=1TOLEN(A$):PRINT"{HOME}":FORI=1TO50
  :NEXTI:PRINT"{2 SPACES}"MID$(A$,A,36)" "
  :NEXTA

```

Mike Frandsen
Missoula, MT

\$3A7 Custom characters on Star printers—Although the user manual accompanying Star printers is clearly written, one point is barely mentioned. When you're defining your own characters, dip switch number five *must* be turned off. Turn the printer off, push dip switch number five to the off position and then turn the printer back on (see the dip switch section of your manual for your particular model). Now your characters will turn out fine!

Mike Dryja
Washington, MI

\$3A8 C-64 screen mapper—If your printer uses Commodore graphics, this menu-driven program will print both screen and color memory maps with numbered grids of 40 columns by 25 rows for screen locations 1024-2023 and color locations 55296-56295. It also prints screen layout grids for plotting column and row coordinates.

```

10 REM SCREEN MAP PRINTER-J.R.CHARNETSKI
20 PRINT"{SHFT CLR}{CRSR DN} 1-SCREEN MEMOR
  Y{HOME}{2 CRSR DNs} 2-COLOR MEMORY{HOME}
  {3 CRSR DNs} 3-SCREEN LAYOUT{HOME}{4 CRS
  R DNs} 4-END{CRSR DN}"
30 GETA$:A=VAL(A$):ON-(A<10A>4)GOTO30:ONAG
  OTO40,50,60:PRINT"{SHFT CLR}":END
40 X=1024:T$="SCREEN MEMORY MAP":GOTO70
50 X=55296:T$="COLOR MEMORY MAP":GOTO70
60 X=0:T$="SCREEN LAYOUT"
70 PRINTA:M=25:S$=" ":OPEN4,4:PRINT#4
80 PRINT#4,SPC(39-(LEN(T$)/2));T$
90 PRINT#4,SPC(19);B$="{4 SPACES}":FORJ=1T
  O4
100 PRINT#4,"0123456789";:NEXT:PRINT#4
110 PRINT#4,SPC(13)RIGHT$(B$+STR$(X)+S$,6);
  :FORI=1TO40:PRINT#4,"{SHFT O}";:NEXT
120 PRINT#4,"{COMD G}";:IFX<MTHENX=X+1:GOTO
  140
130 X=X+40:PRINT#4,MID$(STR$(X-1),2);
140 PRINT#4,CHR$(8):C=C+1
150 PRINT#4,CHR$(15);:IFC<MGOTO110

```

COMPUTER SWAP, INC.
PRESENTS

The Commodore Show

FORMERLY
A WCCA
PRODUCTION

■ Fri., Feb. 20, 10:00-6:00
■ Sat., Feb. 21, 10:00-6:00
■ Sun., Feb. 22, Noon-5:00

NEW
LARGER
LOCATION

Brooks Hall, Civic Center
San Francisco

- EXHIBITS, EVENTS AND DOOR PRIZES
- NATIONAL COMMODORE SPEAKERS
- SHOW SPECIALS AND DISCOUNTS
- SEE THE LATEST INNOVATIONS IN HARDWARE/SOFTWARE TECHNOLOGY

The Commodore Show is the only West Coast exhibition and conference focusing exclusively on the AMIGA, Commodore 128 PC and C-64 marketplace.

REGISTRATION FEES:
One Day Only—\$10
Three Day Pass—\$15

For More Information Or To Reserve Exhibit Space Contact

COMPUTER SWAP, INC.

PO Box 18906, San Jose, CA 95158
(408) 978-SWAP • 800-722-SWAP • IN CA 800-252-SWAP


```
160 PRINT#4,SPC(19);:FORI=1TO40:PRINT#4,"{C  
OMD T}";:NEXT:PRINT#4:CLOSE4:RUN
```

Joseph R. Charnetski
Dallas, PA

\$3A9 Device present check—The following short program works with any Commodore computer and will detect if the disk drive and/or printer is on. You can modify it to wait until the device is turned on to avoid incurring a Device Not Present error in your program.

```
10 REM DEVICE CHECK-STEPHEN FREITAG  
20 OPEN15,8,15:CLOSE15:REM DRIVE  
30 IF ST=0 THEN PRINT"DRIVE IS ON":GOTO50  
40 PRINT"DRIVE IS OFF"  
50 OPEN15,4,15:CLOSE15:REM PRINTER  
60 IF ST=0 THEN PRINT"PRINTER IS ON":END  
70 PRINT"PRINTER IS OFF"
```

Stephen Freitag
Sauquoit, NY

\$3AA C-128 DatafileReportMail—Mike Konshak's Datafile program can be improved on the C-128 by appending the DfReport and DfMail programs to the Datafile program. This is easily accomplished with a few changes.

First load Datafile. Then type the following line in Direct mode (without a line number) to set the "beginning" of the load:

```
Z=65278-FRE(0):POKE 45,ZAND255:POKE 46,Z/256
```

Next, load the DfReport program in the normal manner. Move the cursor up to the line above and press return again. Finally, load DfMail. The programs are now appended into one long program, but you must type the following line to restore the pointer to the start of the Datafile program:

```
POKE 45,1:POKE 46,28
```

Next, use the Delete command to delete lines 508-516 and 1010-1018 (be careful!). Now make the following changes

```
1 REM "C-128 {SHFT D}ATAFILE{SHFT R}EPORT{S  
HFT M}AIL-ED WILLIAMS  
382 GOTO1000  
384 GOTO500  
636 IFC$="E"THENPRINT#4:CLOSE4:GOTO 10  
638 IFC$="M"THENPRINT#4:CLOSE4:GOTO1000  
1124 IFC$="E"THENPRINT#4:CLOSE4:GOTO10  
1126 IFC$="R"THENPRINT#4:CLOSE4:GOTO500
```

and save the new program. You'll no longer have to access the disk drive when you want to use DfReport or DfMail; they'll always be in memory when you want them!

Ed Williams
Walkerville, MT

\$3AB Sonatina in C-128—The following program plays the "Sonatina in C," by Mozart. I translated it for the C-128.

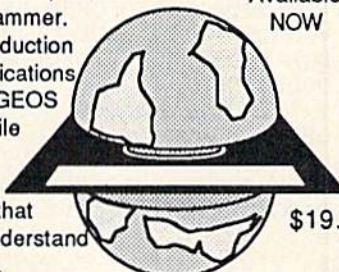
```
10 REM SONATINA IN C-JESSE B BROWN  
20 TEMPO 24:PLAY"V104T0U11X0":PLAY"V203T5U1  
1X0"  
30 A$="V105WCV203QCQGEQGM V105HE V203QBQG  
V105QG V203QEQQM V104.HB V203QDQGFQF V1
```

Learn and Understand **GEOS** Inside and Out

A book for all GEOS users, from the beginner to the programmer. Starts out with an introduction to GEOS and its applications to creating your own GEOS applications, GEOS file formats and internal workings of GEOS.

A must for everyone that wants to learn and understand GEOS inside and out.

Available
NOW



\$19.95

Abacus

Phone 616/241-5510

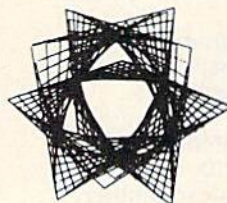
P.O. Box 7219 Dept. R2 Grand Rapids, MI 49510

Telex 709-101 • Fax 616/241-5021

Call now for the name of the dealer nearest you. Or order directly using your MC, Visa or Amex card. Add \$4.00 per order for shipping. Foreign orders add \$10.00 per item. Call today or write for your free catalog. Dealer inquiries welcome—over 1500 nationwide.

Circle 89 on Reader Service card.

CAD-3D



NEW ADVANCED 3-D GRAPHICS

For Commodore 64/128 in 64 mode
View Designs in
Multiple Perspectives

- ☆ Versatile/Fast 360 degree rotation
- ☆ 2000 Line Display
- ☆ Printer capability with latest compatibles
- ☆ 1520 Plotter availability
- ☆ Disk Loading and Saving of Designs
- ☆ Superimpose Designs/Modify Partial Designs
- ☆ Commercial Graphic program compatibility

Professional—Educational—Home Applications
Architects, Engineers, Designers, Programmers, Students

CAD-3D!! Enter me into the fastest growing field in graphic technology. At a special introductory price \$49.95. Add \$4.00 for shipping and handling, for C.O.D. add an additional \$4.00. (California residents please include 6% sales tax).

ih Software

2269 CHESTNUT STREET
SUITE 162
SAN FRANCISCO, CA 94123

ORDER LINE • (415) 923-1081

Dealers/Distributors inquiries welcomed.

Circle 120 on Reader Service card.

Magic

Listing continued.

```

05ICIDM V105WC V203QCQGEQGM"
40 B$="V105WB V203QCQAQFQAM V105HG V203QCQG
V106HDV203QEQQM V105HG V202QB03QGQD V10
5IGIFIE V203QG V105IFM V105WE V203QCQGE
QGM"
50 C$="V104QA V203QFQRHR V104QB05QCQDQEQFQ
M V203QF V105QAQGFQF V203QAQF V105QDQCO
4QBQA V203QAMQE V104QGQAQB V203QRHR V105
QCQDQEQFM"
60 CC$="V203QE V105QGQFQEQD V203QGQE V105QC
04QBQAQGM"
70 D$="V203QD V104QFQQA V203QRHR V104QB05Q
CQDQEM V203QD V105QFQEQDQC V203QFQD V104
QBQAQGF V203QFMC V104QEQGV203QG V104.Q
CV203QE V104.QC V203QG V104.QCM"
80 DD$="V104.HC V203QEQQCQR V104QRM"
90 PLAY A$+B$:PLAY C$+CC$:PLAY D$+A$:PLAY B
$+C$:PLAY CC$+D$:PLAY DD$

```

Jesse B. Brown
Eunice, LA

\$3AC Charming music—I've converted the "Snake Charmer" theme to C-128 music format in the following program. I hope you'll find it "charming" also.

```

10 REM SNAKE CHARMER-JESSE B BROWN
20 ENVELOPE 3,3,0,14,4,0:TEMPO 27

```

```

30 PLAY "V104T3U13X0":PLAY"V203T9U6X0":PLAY
"V3T903U6X0"
40 A$="V2HR V104QDQEM V203WA V303WD V104HFH
EM V203WA V303WD V104HDQDQEM V203WA V303
WD V104QFQAQEQFM V203WA V303WD V104HDQDQ
EM"
50 B$="V203WA V303WD V104HFHEM V203WA V303W
D V104HDQDQEM V203WA V303WD V104QFQAQEQF
M V203WA V303WD V104HDQFQGM"
60 C$="V203WA V303WD V104QAQAQAM V203WA V
303WD V104QAQGEQFM V203WA V303WD V104QG
QGGQGM V203WA V303WD V104QGQFQDQEM"
70 D$="V203WA V303WD V104HFHEM V203WA V303W
D V104HDQDQEM V203WA V303WD V104QFQAQEQF
M V203HA V303HD V104HDM"
80 PLAY A$+B$:PLAY C$+D$

```

Jesse B. Brown
Eunice, LA

\$3AD C-128 Run command—When you edit a Basic line in your efforts to debug a C-64 program, all the variables are lost, which can be quite bothersome. The C-128 has two 64K banks of memory, and Basic 7.0 stores the program and variables separately. Therefore, when you edit a Basic 7.0 program line, the variables in memory are not affected. This can be a valuable, time-saving feature when you're debugging.

Rick Sellers
Little Rock, AR

\$3AE C-128 ML bank switching—The table below gives the value to store in the memory management unit—MMU (\$FF00) to change banks in machine language. You should be in "common" memory when you use this method, or your program will try to continue at the next location in the new bank.

Bank	Value	Bank	Value	Bank	Value
\$0	\$3F	\$6	\$96	\$B	\$EA
\$1	\$7F	\$7	\$D6	\$C	\$06
\$2	\$BF	\$8	\$2A	\$D	\$0A
\$3	\$FF	\$9	\$6A	\$E	\$01
\$4	\$16	\$A	\$AA	\$F	\$00
\$5	\$56				

Ben Kranich
Warren, MI

\$3AF Saving your customized RUN Script 64—I've enjoyed using RUN Script 64, and I've used the Parameter Setting program with it many times. It's a little inconvenient, though, because it won't save the modified RUN Script file onto the same disk. Since the old version needs to be scratched before saving the new version, I added the following line:

```
895 OPEN15,8,15,"S0:RUNSCRIPT":CLOSE15
```

Now the Parameters program scratches the old file before saving the new version. Be sure to follow the instructions for the Parameter Setting program. Now making changes is much easier!

James Hallman
Owensboro, KY

ECHOSM

- *Get beyond the hassle of endless parameters with the MOST ADVANCED disk copier available!
- *Ask the others if their programs will copy Paperback Writer, Paperback Planner, Paperback Filer, and Gunslinger!
- *ECHO includes:
 - A high-speed, ultra-sophisticated, whole-track nibbler, AND
 - An easy-to-install, GCR-descrambler, disk-drive RAM board.
- *ECHO disk not copy protected — make unlimited backups!
- *For your 1541-1571 version coming soon!
- *Receive \$10 trade-in on your Shadow!
- *ECHO is only \$49.95 complete!
- *COMING SOON — Hack Attack, the ADVANCED disk-drive utility!
- *Top Secret Stuff I & II TOGETHER — ONLY \$9.95!
- *Great Dealer Discounts — Call!



UNDERWARESM

2242 SE 110th Avenue
Portland, OR 97216

Orders ONLY - (503) 254-5317 9am-5pm PST
Tech Info - (503) 254-6239 2pm-5pm PST

Allow 2 weeks for personal checks
Add 3% for Visa/MasterCard orders
Add \$4.00 for shipping and handling

The Home User's Guide to Commodore Computing

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.20



March 1987 A CWC/I Publication

Digitize!

**Capture Exciting Images
On Your C-64**

**Print Your DataFile
Mailing Labels & Reports**

Electronic University Update

C-128 Hi-Res Print Utility





Discover an undocumented C-128 keyword; speed up Datafile sorts and improve its Find option; restore programs accidentally erased; convert 40-column, hi-res pictures to Ultra Hi-Res format, and more.

By JIM BORDEN

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN will pay \$10 to \$50 for each trick accepted for publication in the column. If your submission is selected for the Trick of the Month, RUN will award \$50 and a Magic Contributor T-shirt. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and the C-128. Tricks for the C-128 only are not eligible.

\$3B0 C-64 SYS a Border—Creating screen borders with the Print command can be quite a chore. Here's a machine language alternative. This routine can be appended to your program to create borders with your own character and color. The ML program that SYS a Border creates is relocatable and may be loaded wherever you have 100 bytes of free memory. Please note that locations 251 through 254 are used during the execution of the ML program.

The syntax for using SYS a Border is SYS address, screen code #, color code #. The demo at the end of the Basic loader shows how to create a border with the asterisk in the current cursor color.

```
1 REM 64 SYS A BORDER-FRANK COLARICCI
2 REM RELOCATABLE-JUST CHANGE 'BR'
3 BR=49152:REM SYS ADDRESS
4 FOR X=BR TO BR+99:READ A:POKE X,A
5 T=T+A:NEXT:IFT<>14085 THEN(2 SPACES)STOP
6 DATA 032,253,174,032,158,173,032,247
7 DATA 183,140,000,004,032,253,174,032
8 DATA 158,173,032,247,183,140,000,216
```

```
9 DATA 162,039,173,000,004,157,000,004
10 DATA 157,192,007,173,000,216,157,000
11 DATA 216,157,192,219,202,016,235,169
12 DATA 039,133,251,133,253,169,004,133
13 DATA 252,169,216,133,254,162,024,173
14 DATA 000,004,160,000,145,251,200,145
15 DATA 251,173,000,216,145,253,136,145
16 DATA 253,165,251,024,105,040,144,004
17 DATA 230,252,230,254,133,251,133,253
18 DATA 202,208,220,096
19 PRINT"{SHIFT CLR}{3 CRSR DNs}SAMPLE"
20 SYS BR,42,PEEK(646)
```

Frank Colaricci
Winter Park, FL

\$3B1 DFMail record groups—Adding the following lines to DFMail (RUN, December 1984) will print selected parts of a mailing list. It's useful, for example, for addressing a mailing to club members who have not paid their dues. First, sort on a field containing dues payment information, then view to see the first and last record numbers of those who have not paid. You can then print labels for just the delinquent members.

```
1047 PRINT"{CRSR DN}{4 SPACES}{CTRL 9}C{CTR
L 0}ONSECUTIVE GROUP OF RECORDS"
1059 IFC$="C"GOTO1326
1326 INPUT"BEGIN WITH WHICH RECORD (0 TO EX
IT)";FS:IFFS=0GOTO1040
1328 IFFS>XTHENPRINT"NO SUCH RECORD":GOTO13
26
1330 INPUT"END WITH WHICH RECORD (0 TO EXIT
)";LS:IFLS=0GOTO1040
1332 IFLS<FSTHENPRINT"TRY AGAIN!":GOTO1326
1334 FORI=FSTOLS:GOSUB1268:NEXT:GOTO1040
```

Stanley L. Anderson
Tishomingo, OK

\$3B2 Checking monitor resolution—The next time you shop for an 80-column monitor, test its resolution right in the store with this short program:

```
10 PRINT CHR$(14):FOR A = 1 TO 40*23:PRINT"V";NEXT
```


Magic

Enter the program and run it. The screen will fill with 23 lines of commas and lowercase v's. To check the resolution, look at the single pixel that forms the point of the center of the v or the tail of the comma. On a monochrome monitor the pixels should be a single round point of light. On a color monitor only one color should predominate, with only slight spilling of the primary colors (red, green and blue) at the edges of the display area. You might want to try different color combinations for the screen and text, too.

Since only one "gun" is used to produce the monochrome picture, the image is sharper and clearer than the color image. Remember that adjusting the brightness, contrast, color and tint also affects picture quality.

Paul L. Hubbard
Baltimore, MD

\$3B3 C-64 disk verify tip—After saving a program to disk, I always verify it with VERIFY "*" ,8 to save time. This works on the C-64 and VIC because * accesses the last file saved or loaded. (The exception is when you initially turn on the drive; it refers only to the first file on the disk.)

Hal Vaughn
Mount Airy, NC

\$3B4 C-128 input control—In the September 1986 issue of RUN, trick \$32F for the C-64 put an "invisible" quotation mark in an Input statement so that you could enter commas and colons when inputting data. My program does the same thing on the C-128 in 128 mode.

```
10 REM C-128 INPUT CONTROL-SUE HOFFMAN
20 PRINT"[PROMPT HERE]";:TC=RCLR(5):SW=PEEK
  (215):IFSW<>0THENSW=6
30 COLOR5,RCLR(SW):PRINT"{2 CRSR RTs}"CHR$(
  34)CHR$(27)"O{3 CRSR LFs}";
40 COLOR5,TC:POKE208,1:POKE842,29:INPUTA$
50 PRINT"A$="A$:IFA$<>"END"GOTO20
```

Sue Hoffman
Hudson, WI

\$3B5 Base conversions—Did you ever wish there was an easy way to convert a number from one number base to another? The C-128's Monitor mode makes conversion easy! Just type MONITOR and press return (or use the F8 key) to put you into the built-in monitor. To change a number from one base to another, type +, \$, & or % and the number. You'll be given the decimal (+), hexadecimal (\$), octal (&) and binary (%) equivalents. Just precede the number with the appropriate symbol, and you can convert from any base to the others. To return to Basic, type X and press return.

Kenneth H. Hottes
Danbury, CT

\$3B6 Irish Jig 128—Ah, the luck of the Irish! Bring out the "wee bit o' Irish" in your C-128 with this popular Irish jig.

```
10 REM AN IRISH JIG-JESSE BROWN
20 ENVELOPE 0,2,0,15,5,2,200:TEMPO 19
30 PLAY "V104T0U15X0":PLAY"V203T5U15X0":PLA
  Y"V303T6U15X0"
40 AS="V104WRV203.HG V303.HCM V104WR V203.H
  G V303.HCM V203.HC V303.HG V105QEICQEICM
  V203.HC V303.HG V105QEICIGIFIEM V203.HC
  V303.HG V105QFIDQFIDM"
50 BS="V203.HC V303.HG V105QFIDIFIEIDM V203
  .HC V303.HG V105QEICQEICM V203.HC V303.H
  G V105QEICIGIFIEM V203QD V105IFIEIF V203
  IRQG V105QD V203IR V105IGM"
60 BB$="V203QC V105IEICIC V203IR V105QC V20
  3QC V105IR V203IRM"
70 PLAY AS:PLAY BS:PLAY BB$+AS:PLAY BS+BB$
```

Jesse B. Brown
Eunice, LA

\$3B7 C-64 input prompt—Sometimes the standard input prompt can get in the way of elegant programming. For instance, when writing a financial program, you may want the question mark replaced with a dollar sign. My short routine rewrites Basic into RAM to let you do just that. Insert the data loader at the beginning of your program and activate the machine language routine with SYS 49152. A dollar sign will appear whenever the Input statement is called.

You can restore the question mark at any time, or you can use any other character you want. Just poke the selected character code into location 43846. If you prefer that no character appear, try using a 32 (the space character) as the prompt character.

```
30 REM DOLLAR INPUT-KENT BRIDWELL
40 CK=0:FORI=49152 TO 49223:READ A
50 CK=CK+A:POKE I,A:NEXT
60 IFCK<>11068THENPRINT"DATA ERROR!":END
70 SYS49152:REM >>TEST PROMPT NOW
80 PRINT:INPUT"ENTER PRICE: ";D
90 PRINT:PRINT"PRICE IS $"D
100 DATA 169,000,133,251,133,253,169,160
110 DATA 133,252,133,254,169,255,141,072
120 DATA 192,169,191,141,073,192,160,000
130 DATA 177,251,145,253,230,251,208,002
140 DATA 230,252,165,251,205,072,192,208
150 DATA 010,165,252,205,073,192,208,003
160 DATA 076,060,192,230,253,208,002,230
170 DATA 254,076,022,192,169,036,141,070
180 DATA 171,165,001,041,254,133,001,096
```

Kent M. Bridwell
Santa Monica, CA

\$3B8 C-64 & C-128 fraction action—Magic trick \$340 (RUN, October 1986) converts decimal fractions to common fractions, but it is quite slow. My program works faster, reducing the fractions much as you or I would.

```
10 REM COMMON FRACTIONS-SISTER ANNE STREMLA
  U
20 INPUT "{CRSR DN}GIVE ME A DECIMAL NUMBER
  ";N$
30 FORX=1TO LEN(N$)
40 IF MID$(N$,X,1)=". "THEN FLAG=1:D=X
50 NEXT:IF VAL(N$)=0THEN END
60 IF FLAG <>1 THEN PRINTN$:GOTO20
70 L$=LEFT$(N$,D-1):R$=RIGHT$(N$,LEN(N$)-D)
```

Continued on p. 76.

Magic

From p. 12.

```
80 T$="1":FORV=1 TO LEN(R$):T$=T$+"0":NEXT
90 PRINTL$ "R$/"T$" IN LOWEST TERMS IS:"
100 R=VAL(R$):T=VAL(T$)
110 FORZ=2 TO INT(T/2)
120 IFR/Z=INT(R/Z)AND T/Z=INT(T/Z) THEN R=R
    /Z:T=T/Z:Z=1E10
130 NEXT:IFZ=1E10 GOTO110
140 R$=STR$(R):T$=STR$(T):R$=RIGHT$(R$,LEN(
    R$)-1):T$=RIGHT$(T$,LEN(T$)-1)
150 PRINTL$ "R$/"T$:RUN
```

Sister Anne Stremlau
Address unknown

\$3B9 C-128 Unnew program—If you ever accidentally erase a program with the New command (a not uncommon occurrence—just wait till you do it yourself), you can restore it with the program below, which creates an Unnew program on disk as a machine language file. Insert the disk in the drive and type BOOT "%UNNEW" and hit return. If you have a graphic screen active at the time, type GRAPHIC1:GRAPHIC0 in Direct mode before booting %UNNEW. After you boot %UNNEW, your Basic program will be restored.

```
10 REM C-128 UNNEW-L. K. SNYDER
20 BANK 15:FORI=2816TO2833:READA:POKEI,A:NE
    XT
30 BSAVE"%UNNEW",B0,P2816TOP2834:END
40 DATA 165,45,133,251,165,46,133,252
50 DATA 160,0,169,1,145,251,32,229,94,96
```

L. K. Snyder
Address unknown

\$3BA C-128 SYS in reverse—I found a reference to an undocumented C-128 keyword in my copy of the *C-128 Programmer's Reference Guide*. The keyword is RREG, for Read REGisters, and it works much like the SYS command. You can "read" the results of the last SYS you called with RREG A,X,Y,S. This reads the values of the Accumulator, X register, Y register and the Status register into variables A, X, Y and S, respectively. You can use any variables you like and can read any register by substituting commas to skip the other registers. For example, to put the value of the Y register into variable YR, use the command RREG „YR. This makes it very easy to pass parameters with SYS and read the results back into variables.

Here's a practical example that gives the current window size. Use ESC T to set the top of a window and ESC B to set the bottom.

```
10 REM C-128 RREG -JIM BORDEN
20 BANK15:SYS65517:RREG „X,Y
30 PRINT"WINDOW IS"X+1"COLUMNS WIDE"
40 PRINT"AND"Y+1"LINE HIGH."
```

See the next trick for another example.

Jim Borden
Carlisle, PA

\$3BB From Hi-Res to Ultra Hi-Res—My program converts a 40-column hi-res picture to Ultra Hi-Res format.

The original picture should be loaded in as a picture (use BLOAD"NAME",P8192 to load just the picture, and substitute P7168 in the BLoad command to load the picture and color) and then saved to disk with BSAVE "filename", B0, P8192 TO P16384. Then load and run the VIC/Ultra Hi-Res program.

The program converts the 320 × 200-pixel format of the VIC screen to the 640 × 200 format of the 80-column hi-res screen. In addition, the width is stretched in the process. This takes about five minutes in Fast mode. Now load the Ultra Hi-Res program and run it. You can then load your picture with @LOAD,0,"filename".

```
10 REM VIC=>U.H.RES-DANIEL MONTES
20 REM ML SUB BY JIM BORDEN
30 FAST:DIM A$(319)
40 FOR K=4864TO4904:READX:POKEK,X:NEXT
50 DATA 141,41,19,169,2,141,42,19,169,0,162
60 DATA 255,232,224,4,240,10,14,41,19,144,2
    46
70 DATA 29,37,19,176,241,72,206,42,19,208,2
    31
80 DATA 104,170,104,96,192,48,12,3
90 PRINT:INPUT"SOURCE FILENAME";S$
100 DOPEN#8,(S$+",P"):IF DSTHENPRINT:PRINTD
    S$:DCLOSE#8:GOTO90
110 PRINT:INPUT"ULTRA FILENAME ";T$
120 DOPEN#9,(T$+",P,W"):IF DSTHENPRINT:PRIN
    TDSS:DCLOSE#9:GOTO110
130 PRINT:PRINT"WORKING ON ROW:";
140 GET#8,C$,C$:FORF=1TO25:PRINTF;
150 FORI=0TO319:GET#8,A$(I):NEXT
160 FORJ=0TO7:FORI=JTOJ+312STEP8
170 A1=(ASC(A$(I)+CHR$(0)))
180 SYS4864,A1:RREG A1,X1
190 PRINT#9,CHR$(A1)CHR$(X1);
200 NEXT:NEXT:NEXT:DCLOSE:PRINTCHR$(7)
```

Daniel Montes
Cordoba, Argentina

\$3BC Fastest Datafile 64—Since I've discovered the usefulness of Datafile and its peripheral programs (*RUN*, November and December 1984), I've gradually increased the number of applications. One of my databases contains 438 records, and sorting it before printing it out used to take 426 seconds. I found that if I compiled Datafile with a compiler such as Blitz!, the same sort took only 90 seconds!

Searches and file loads also execute faster. A typical 500-record search was cut from 18 seconds to 6 seconds, while loading the file was reduced from 120 seconds to about 80 seconds.

The beauty of Datafile is that it can be loaded and put into use before most commercial database programs get their first screen. Compiling it makes it even more beautiful!

Phil Hysell
Louisville, KY

\$3BD Datafile Find option improvement—I've made some changes to Mike Konshak's excellent Datafile program so that you can use its Find option to locate a keyword anywhere within a field. The original Datafile only found a match at the beginning of a field. Make these changes to the program:

```
1 REM DATAFILE SUBSTRING FIND - KENNY LAWSON
```


Magic

```
229 LT = LEN(T$)
231 FORQQ = 1 TO LEN(REC$(K%(I,SF) - LT + 1)
232 IFT$ = MID$(REC$(K%(I,SF),QQ,LT)GOTO236
233 NEXT
```

The changes should work on any Commodore computer. However, if you're using a C-128 in 128 mode, you can use this line to replace all of the above lines:

```
232 IF INSTR(REC$(K%(I,SF),T$)GOTO236
```

Please note that this could be used as a Keyword Search subroutine in your own applications programs, also. Just be sure that your program uses the proper variable names.

Kenny Lawson
Indianapolis, IN

\$3BE Scroll control tip—Memory location 214 always contains the physical screen line number of the cursor (0 to 24), and, in programming, it is a useful location for controlling loop output to the screen. For example, when PEEK(214) is equal to a line number you've chosen, branch to a routine that waits for the user to press a key, then clear the screen and continue output. You can use 214 only on the VIC and C-64. In C-128 mode, use location 235 and on the Plus/4, use location 205.

Joseph Charnetski
Dallas, PA

\$3BF C-64 great escape—Have you ever been trapped in an input on your C-64, only to be forced to exit using the return key? Well, here's a better exit. Simply hold down the shift key, press the run-stop key and then quickly release the shift key. This is done with a sort of rolling motion. A note of caution: If you use a Datassette, make sure none of its buttons are depressed; otherwise it could cause a program to begin loading from the Datassette and ruin the program currently in memory.

David Hinkle
Nanty Glo, PA

\$3C0 C-64 letter catcher—This game for the C-64 can sharpen your reflexes and typing skills, and you can have fun at the same time.

When you run the program, a randomly chosen letter appears at the bottom of the screen and moves slowly upward. If you press the corresponding key before the letter reaches the top, a point is added to your score and a new letter is chosen. The quicker your fingers fly, the more points you can get. The program increases speed a little after each letter. If you touch-type, you'll learn to type faster.

```
10 REM LETTER CATCHER - CHING KO
20 DT=100:S=0:CH=RND(-TI)
30 PRINTCHR$(147):CH=INT(RND(1)*26)+65
40 FORDE=1TO23:PRINT:NEXT
50 PRINT:PRINTTAB(INT(RND(1)*37)+2)CHR$(CH)
  :I=24
60 GETK$:IFK$<>CHR$(CH)GOTO90
70 PRINT CHR$(147):S=S+1:PRINTTAB(18);S
```

```
80 DT=DT-1:FORDE=1TO250:NEXT:GOTO30
90 FORDE=1TODT:NEXT
100 PRINT:IFI>0THENI=I-1:GOTO60
110 PRINTCHR$(147)"YOUR SCORE WAS";S:PRINT
120 PRINT"PRESS 'RETURN' TO PLAY AGAIN."
130 INPUT K$:IFK$=""GOTO20
```

Ching Ko
McPherson, KS

\$3C1 C-64 trace—Debugging a Basic program is made easier with a trace utility. These utilities trace the execution of a program and display the line numbers. Most traces display the lines on the screen while the program is running. This can cause problems if your program prints to the screen, resulting in scrambled displays. Also, when listing a program to compare it with the trace, you can accidentally scroll the trace values right off the screen.

To overcome these annoyances, C-64 Trace stores all executed lines in memory (up to 2000 of them) while your program is running, and it allows the numbers to be recalled later as often as you wish. To use C-64 Trace, type SYS820 to turn it on, and then run your program. (Turning on the trace clears all previously saved line numbers.)

To display the executed lines and shut off the trace, type SYS916. The line list can be stopped at any time with the run-stop key. Also, if there's a For-Next loop on a line, rather than display the same line many times, C-64 Trace does it just once. Lines containing only REMs are also ignored.

```
1 REM C-64 TRACE UTILITY-RICHARD PENN
10 FORU=820TO990:READQ:POKEU,Q:C=C+Q:NEXT
15 IFC<>21791THENPRINT"DATA ENTRY ERROR!":STOP
20 PRINT"{SHFT CLR}SYS820 - TRACE ON":PRINT
  "SYS916 - DISPLAY LINES":POKE179,4
100 DATA 169,77,141,10,3,169,3,141,11,3,169
  ,0,133,251,141,146,3,141,147
110 DATA 3,169,192,133,252,96,72,138,72,152
  ,72,8,165,157,201,0,208,36,160
120 DATA 0,165,57,166,58,205,146,3,208,8,23
  6,147,3,208,3,76,125,3,141
130 DATA 146,3,145,251,32,134,3,142,147,3,1
  38,145,251,32,134,3,40,104,168
140 DATA 104,170,104,76,134,174,230,251,165
  ,251,201,0,240,1,96,230,252,96,4
150 DATA 0,169,0,133,253,169,192,133,254,16
  0,0,165,253,197,251,208,6,165,254
160 DATA 197,252,240,30,169,13,32,210,255,1
  77,253,170,32,211,3,177,253,32,205
170 DATA 189,32,211,3,32,234,255,32,225,255
  ,240,3,76,156,3,169,134,141,10
180 DATA 3,169,174,141,11,3,96,230,253,165,
  253,201,0,240,1,96,230,254,96
```

Richard Penn
Montreal, Quebec, Canada

\$3C2 64 Auto Menu booter—The Auto Menu program in the April 1986 issue of *RUN* is really great, and I use it on all my disks. However, if each program on the disk has the following lines as an Exit routine, the Auto Menu program can be loaded automatically and run.

```
10 REM AUTO MENU BOOTER-THOMAS W. O'DEA
62500 INPUT"DO YOU WANT TO RUN THE PROGRAM
  AGAIN{4 SPACES}(Y/N){2 SPACES}Y{3 CRS
  R LFs}";R$
```

Continued on p. 82.

What
C-64 &
C-128* USERS
HAVE BEEN WAITING FOR!!

DATA CHIEF™

10 MBYTE DRIVE
Stores 60 Floppies!



20 Mbyte Model HFD-20
ONLY \$995.00

10 MBYTE MODEL HFD-10
ONLY \$895.00

5 MBYTE MODEL HFD-5
ONLY \$695.00

- * FAST
- * EXPANDABLE
- * TRANSPARENT OPERATION
- * MULTIPLE CHAINED PARTITIONS
- * GEOS** COMPATIBLE
- * SUPPORTS SINGLE SIDED C-128 AND CPM
- * BUILT-IN FLOPPY DRIVE
- * SUPPORTS ALL 2.0 TO 7.0 (C-128) DOS COMMANDS
- * REPROGRAMMABLE "BOS PAK"™ (BUFFERED OPERATING SYSTEM)

The DATA CHIEF has been designed by C-64 users for C-64 users with important features like:

- Storage in original individual disk format
- Easy Access to programs via Disk Number
- Example: for disk # 60: OPEN 15, 8, 15, "H60"

Standard Utilities Included

- Includes Wedge Commands
- 135 Watt Power Supply
- Metal Enclosure houses up to 3 each 1/2 HI Hard Disks
- Provides Excellent Monitor Stand "P.C. style"
- Allows room for future expansion
- Complete Operating Manual
- 1 Year Warranty

The DATA CHIEF is perfect for software and hardware developers, business users, students, and serious computer experimenters as well as for bulletin boards and data base systems.

TO ORDER SEND CERTIFIED CHECK OR MONEY ORDER TO:

Maryland residents add 5% sales tax

For more information call:

(301) 371-4000

Allow 4-6 weeks delivery (U.S. Only)

* C-64 & C-128 are trademarks of Commodore Electronics, Ltd.

** GEOS is a trademark of Berkeley Softworks.

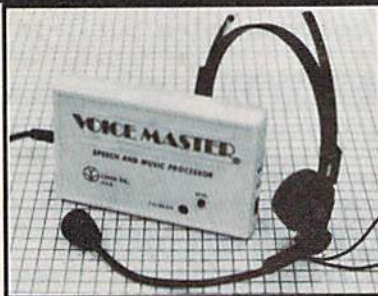


103 BAUGHMAN'S LANE
SUITE 301
FREDERICK, MD 21701

Circle 35 on Reader Service card.

THE AMAZING VOICE MASTER®

ENTER
THE FINAL
FRONTIER
OF
MAN-TO-MACHINE
COMMUNICATIONS



There is nothing else like it. Voice Master gives both speech output and voice recognition with this single hardware product! Your voice controls programs, or home appliances, robots, and more with spoken commands. Verbal response back gives status, verifies, or requests your reply! Speech output and recognition patterns are recorded in with your voice. Or use the voice of your friend, boss, teacher, mother, even the family pet! Programming is simple with new commands added to BASIC. A music bonus program lets you write and compose musical scores simply by humming the tune. Unlimited applications for fun, education, and commercial use. Design your own programs for profit. Speech and recognition quality unsurpassed by even the most sophisticated machines. Only Covox provides this high-tech marvel at a price less than most common peripherals.

The Covox Voice Master comes complete with all hardware and software for only \$89.95. (Add \$4 shipping and handling for USA, \$6 Canada, \$10 overseas.) Available for Commodore 64/128, Apple II, II+, IIc, IIe, Atari 800, 800XL, 130 XE. Specify when ordering. Visa, MasterCard phone orders accepted.



Call or write for FREE Voice Master Infopak and special combination package offers.

COVOX INC., DEPT. RN

675-D Conger Street • Eugene, Oregon 97402 • U.S.A.
Area Code (503) 342-1271 • Telex 706017 (Av Alarm UD)

Circle 300 on Reader Service card.

Magic

From p. 78.

```
62510 IF R$="Y" THEN RUN
62520 IFR$<>"N" THEN PRINT "{3 CRSR UPs}":GOTO 62500
62530 POKE53281,1:POKE646,0
62540 PRINT "{SHFT CLR}{11 CRSR DNs}"SPC(13)
        "LOADING MENU"SPC(108)"PLEASE WAIT..."
62550 PRINT"LOAD"CHR$(34)"AUTO MENU"CHR$(34)
        ",8"
62560 PRINT "{4 CRSR UPs}":POKE631,131:POKE198,1:END
```

Thomas W. O'Dea
Randolph, MA

\$3C3 CalcAid 128/64—CalcAid 64 (see *RUN*, November 1986) lets you view its seven-column spreadsheet only three columns at a time. Adding the lines below will give you full use of the C-128's 80-column mode so that you can view all seven columns at once and use the Fast mode. The C-128's function keys are redefined to the function key values for the C-64 (except that you cannot control the 80-column screen colors). Use CTRLX to end the program and restore your original function key definitions. The 40-column mode will also work, but, of course, CalcAid returns to the three-column display, and you must then use Slow mode.

```
2 REM CALCAID 64/128 - JIM BORDEN
3 REM CHANGES TO ALLOW 40/80 COL
6 PA=1:Z=0:P=100:SW=27:CW=2:IFFRE(0)=FRE(1)
  GOTO200
8 IFPEEK(215) THEN SW=23:CW=6:SW$="{39 SPACES}"
  "
9 F9=1:FORCD=4096TO4113:POKE CD+238,PEEK(CD)
  :NEXT
10 FORCD=4096TO4113:READ R:POKE CD,R:NEXT
11 DATA 1,1,1,1,1,1,1,1,0,0:REM NEW F KEYS
12 DATA 133,137,134,138,135,139,136,140
70 IFG$=CHR$(29) THEN IFC<SW THEN C=C+1:GOSUB10000
  :GOTO300
110 IFG$=CHR$(24) AND F9=1 THEN FORCD=4096TO4113
  :POKE CD,PEEK(CD+238):NEXT:END
2160 C=VAL(MID$(IN$,2,2)):IFC>29-CW THEN C=29-CW
2162 IFASC(LEFT$(IN$,1))>70 THEN NRD=6
2163 IFASC(LEFT$(IN$,1))<=70 THEN NRD=ASC(LEFT$(IN$,1))-65
10010 PRINTCHR$(18); "{40 SPACES}"SW$
10015 IFZ=1 THEN PRINTTAB(5);CT;TAB(16);C+1;TAB(27);C+2:GOTO10020
10019 PRINTTAB(5);C;TAB(16);C+1;TAB(27);C+2
10020 IFCW>2 THEN PRINT "{CRSR UP}"TAB(38);C+3;TAB(49);C+4;TAB(60);C+5;TAB(71);C+6
10023 FORR=1TOCW:PRINTTAB(2+11*R);DA$(RD,C+R);:NEXT
10024 PRINT
10027 FORR=1TOCW:PRINTTAB(2+11*R);DA$(RT,C+R);:NEXT
10028 PRINT
10060 FORRR=1TOCW:PRINTTAB(2+11*RR);DA$(R,C+RR);:NEXT
10070 PRINT
```

Jim Borden
Carlisle, PA

The Home User's Guide to Commodore Computing

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.20

RUN

April 1987 A CWC/I Publication

DISCOVER THE HARD DRIVE ADVANTAGE:

- ✓ Save Time
- ✓ Increase Storage
- ✓ Eliminate Floppies

Produce
Reports
with DFCalc





Load and run Basic programs the easy way; add a keyboard tone feature to your C-64; simplify program debugging; default to disk every time; create colorful bar charts; type from right to left on your C-64; and more.

Compiled by JIM BORDEN

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

*Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458*

RUN pays \$10 to \$40 for each trick accepted for publication in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for the C-128 only are not eligible for Trick of the Month.

If you'd like a copy of RUN's latest edition of the Magic Trick Writer's Guide, enclose a self-addressed, stamped envelope with your request, and you'll receive a copy in two to three weeks.

\$3C7 64-yard dash—I teach computer science at a small private school. Unfortunately, we do not have as many computers as we'd like, and, until now, fighting over computer time had been a real problem. The 64-Yard Dash program is my solution. (The program should also run on the VIC-20, Plus/4 and C-128.)

Type in the program and run it. You'll be asked to give the number of students and their initials (two characters). The program will randomly choose the order in which students may use the computer. Watch out for clever students who might try to alter the program in their favor (this is the voice of experience speaking).

```
100 PRINT "{SHIFT CLR}{CTRL 2}"TAB(14)"64 YAR
D DASH":POKE53280,0:POKE53281,0
110 INPUT "{2 CRSR DNs}NUMBER OF PEOPLE (8 M
AX)";N:IFN>8ORN<1 THENRUN
120 FORA=1TON
```

```
130 PRINT "{HOME}{6 CRSR DNs}INITIALS OF PER
SON #{8 SPACES}{8 CRSR LFs}";:INPUTN$(A
)
140 IFLEN(N$(A))<>2THEN130
150 NEXT
160 PRINT "{SHIFT CLR}{CRSR DN}"TAB(14)"64 YA
RD DASH{3 CRSR DNs}"
170 PRINTSPC(38)" {COMD S}"
180 FORL=1TON*2:PRINTSPC(38)" {SHIFT B}":NEXT
190 PRINTSPC(38)" {COMD X}{HOME}{5 CRSR DNs}
"
200 FORA=1TON:PRINTN$(A):PRINT:NEXT
210 TI$=""00000000"
220 R%=1+N*RND(.):PRINT "{HOME}{3 CRSR DNs}"
:FORK=1TOR%:PRINT "{CRSR DN}":NEXT:P(R%)
=P(R%)+1
230 IFP(R%)>34THEN220
240 PRINTSPC(P(R%)+2)" {CTRL 9}{CTRL 2}{CRS
R DN}{CRSR LF}{CTRL 6}{CRSR UP}{CTRL 9}
{CTRL 2}{CRSR DN}{CRSR LF}{CTRL 6}{CT
RL 0}{SHIFT LB.}"
250 IFP(R%)=34THEN270
260 GOTO220
270 W=W+1:T$=MID$(STR$(INT((TI/60)*100)/100
),2)
280 PRINTSPC(25)" {CTRL 9}{CTRL 2}{2 CRSR UP
s}"T$TAB(30)"SEC"TAB(34)" {MID$(STR$(W
),2)}":IFW<NTHEN220
290 PRINT "{HOME}{23 CRSR DNs}"TAB(13)" {CTRL
2}PRESS ANY KEY."
300 GETA$:IFA$=""THEN300
```

Scott M. Huse
Salisbury Center, NY

\$3C8 Easy-access dip switches—When I use my Card? +G interface with my software, I frequently need to change the positions of interface switches 7 and 8 on the circuit board, and the board has to be removed each time to make the change.

I solved this annoying problem by soldering flexible wires to these switches on the bottom of the circuit board and bringing them out to miniature single-pole, single-throw (SPST) switches mounted in a small box outside the

Magic

interface. I also mounted another SPST switch to control power from the cassette port to the interface.

Now, when I load a program and find that one or both switches need to be changed, I just change the SPST switches. Be sure you turn the SPST power switch off before flipping the other switches, and then turn it on again afterwards.

F. C. Horn
Jekyll Island, GA

\$3C9 Easy load and run—I've found a quick and easy way to load and run a Basic program on any Commodore computer:

```
LOAD "filename",8:{SHIFT RUN-STOP}
```

When you press the shift/run-stop combination, which stores the Return and Run commands in the buffer, your program will load and run automatically.

If you want to load programs from the directory with my trick, type LOAD over the number of blocks and move the cursor past the second quote. Then type ,8: and press the shift/run-stop key. If the directory is on the screen, you can load a program with this procedure only if the program begins with a line 0. Otherwise, the program will crash.

Carlos Villalpando
Weslaco, TX

\$3CA C-64 keyboard tone—Some computers have a built-in keyboard tone feature that emits a clicking sound to confirm that a key was pressed. My program adds this feature to your C-64. To disable the keyboard tone, press the run-stop/restore combination; to re-enable it, type SYS679.

```
1 REM C-64 KEYBOARD TONE-RICHARD PENN
10 FOR U=679 TO 755: READ Q: POKE U, Q: CK=CK+Q: NEXT
  T
11 IF CK<>9477 THEN PRINT "ERROR IN DATA": END
12 SYS 679
13 DATA 120,169,180,141,20,3,169
14 DATA 2,141,21,3,88,96,166
15 DATA 197,228,2,240,55,134,2
16 DATA 224,64,240,49,169,15,141
17 DATA 24,212,169,0,141,5,212
18 DATA 169,240,141,6,212,169,30
19 DATA 141,1,212,169,0,141,0
20 DATA 212,169,17,141,4,212,160
21 DATA 0,162,0,232,224,255,208
22 DATA 251,200,192,12,208,244,169
23 DATA 16,141,4,212,76,49,234
```

Richard Penn
Montreal, Quebec, Canada

\$3CB Disk mode changer—I write and edit C-64 Basic programs on the C-128 in 128 mode, but the 1571 disk drive can cause delays when it first tries to read the directory off some 1541-formatted disks. To operate in 1541 mode without the delays, type in my program. Use the F4 key to switch to 1541 mode and the F8 key to switch to 1571 mode. Press F1 to use the 40-column screen in Slow mode.

```
1 REM 1571/1541 MODE SELECT-L.L.PANKEY
10 KEY4,"OPEN1,8,15,"+CHR$(34)+"U0>M0"+CHR$(
  34)+":CLOSE1:FAST"+CHR$(13)
20 KEY8,"OPEN1,8,15,"+CHR$(34)+"U0>M1"+CHR$(
  34)+":CLOSE1:FAST"+CHR$(13)
30 KEY1,"SLOW"+CHR$(13)
```

L. L. Pankey
Dana Point, CA

\$3CC C-128 debugging aid—I enjoy debugging programs, but clearing the screen, listing the offending line and then moving the cursor to make the correction is nothing but drudgery. Adding a few lines to my programs has restored the good times.

Line 10 traps the error and directs control to line 63000, which clears the screen below the cursor and prints the error message. Then line 63010 positions the cursor at the beginning of the offending line, with the error underscored (80-Column mode) or in reverse (40-Column mode). The only thing left for me to do is move the cursor to the error and correct it!

```
1 REM 128 DEBUG AID-EDWARD HORGAN
10 TRAP 63000
20 THIS IS AN INTENTIONAL ERROR
30 END
63000 PRINT CHR$(27)@"ERR$(ER)
63010 HELP:PRINT "{4 CRSR UPs}": END
```

Edward Horgan
Coatesville, PA

\$3CD Plus/4 Perfect Typist—Many of the programs in RUN can be easily adapted for the Plus/4, but you need a checksum program to verify the program lines as they are entered. Making a few changes to the 128 Perfect Typist program provides the checksums for the Plus/4.

Enter the 128 Perfect Typist program listed in the How To Type in Listings department of this magazine, then make the following changes before saving the program:

Line 1: change the line to 1 REM PLUS/4 PERFECT TYPIST
Line 20: change 28312 to 28306
Line 40: change 128 to +4
Line 5260: change 022 to 020 and 023 to 021
Line 5280: change 116 to 115
Line 5290: change 117 to 116

Now save the program as +4 Perfect Typist.

Since the memory locations for Basic program storage overwrite the machine language, you must type the following line in Direct mode before loading +4 Perfect Typist:

```
POKE 44,22:POKE 5632,0:NEW {RETURN}
```

This line moves the bottom of Basic upward to protect the machine language.

Now you're ready to load and run +4 Perfect Typist. Remember, when you type in C-128 listings, a C-128 keyword that's foreign to the Plus/4's Basic language will produce an incorrect checksum, so the keyword will have to be changed to work on the Plus/4.

Frank Hiltibrand
Newport, KY

Continued on p. 84.

Trick of the Month

\$3CE C-64 disk default—Are you tired of typing ,8 on your C-64 every time you want to access a program from disk? Well, now you can make your computer default to disk instead of to tape, so you can load and save programs without typing ,8 after the filename. You don't even need a closing quote! The run-stop/restore combination disables this utility, but you can enable it again with SYS679.

```
1 REM 64 DISK DEFAULT-RICHARD PENN
10 FORU=679TO716:READQ:POKEU,Q:CK=CK+Q:NEXT
11 IFCK<>4119THEN PRINT"ERROR IN DATA":END
12 SYS 679
13 DATA 169,2,141,49,3,141,51,3,169,186
14 DATA 141,48,3,169,197,141,50,3,96,169
15 DATA 8,133,186,169,0,133,10,76,165
16 DATA 244,169,8,133,186,76,237,245,10
```

Richard Penn
Montreal, Quebec, Canada

\$3CF C-64 bar chart demo—This short program creates colorful bar charts to demonstrate a programming technique for presenting data graphically. The program uses random values to simulate the data needed to generate bars of various sizes and colors. If you've wanted to include bar charts in your Basic programming, but thought it might be too difficult, you might find helpful ideas in this demo program.

```
10 REM 64 BAR CHARTS-J.R.CHARNETSKI
20 POKE53280,3:POKE53281,1:BW$="{CTRL 9}{2
  SPACES}" :CU$="{2 CRSR UPS}"
30 PRINT"{SHT CLR}{CTRL 1}{2 CRSR DNs}"
40 FOR I=1TO20:PRINT TAB(4)"{SHT P}":NEXT
50 PRINTTAB(4);:FOR I=1TO32:PRINT"{COMD Y}"
  ;:NEXT:BX=6
60 BC=INT(RND(0)*15)+2
70 BY=INT(RND(0)*20)+1:POKE 646,BC:PRINT CU
  $
80 FOR BAR=1TOBY:PRINT TAB(BX)BW$CU$:NEXT:P
  RINT"{CTRL 1}"
90 FOR CD=1TOBY:PRINT TAB(BX+2)"{CTRL J}":N
  EXT:BX=BX+3:IFBX<36 THEN 60
100 PRINT"{HOME}REPEAT DEMO (Y/N)?"
110 GET A$:IF A$="Y"THEN 30
120 IF A$="N"THEN PRINT"{SHT CLR}":END
130 GOTO110
```

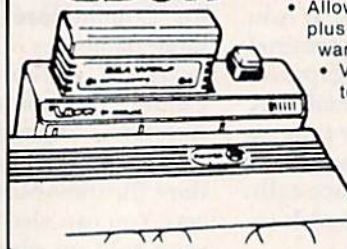
Joseph R. Charnetski
Dallas, PA

\$3D0 C-64 screen eraser—My subroutine adds a touch of magic to any Basic program by erasing the screen from four directions in a sequence that starts at the edge of the screen and erases toward the center. The more characters it has to erase, the more visually attractive is the effect.

Our Customers Agree

CARTRIDGE PORT EXPANSION \$19.95
For C-64 and C-128

- Allows one cartridge on the top, plus a port in the back for hardware access.
- Vertical cartridge port is easy to use.
- Built-in reset button, end turning the computer off and on.
- Rests on the work surface, ends stress on the port of plugging unplugging cartridges.

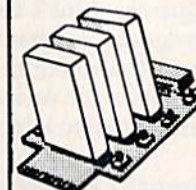


PROTECTION REVEALED \$15.95

Now in its sixth printing!!! A beginners guide to software protection. Written to give you a fundamental understanding of a disk and BASIC protection. Identify what you are seeing when examining a disk. Become a master of illusion. Reveals countless tricks and tips that mystify the user. The book is 141 pages and includes a free disk of 21 utility programs.

APROSPAND-64 \$29.95

Give your C64 or 128 full expandability. This skillfully designed expansion unit plugs into the cartridge port, this gives you 4 switchable (single or in combination) cartridge slots, includes fuse protection and a reset button!

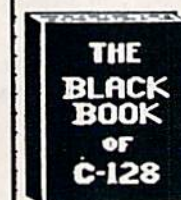


CABLES

Drive/printer 6 ft. 6 pin male to male	B66	\$ 6.95
Drive/printer 9 ft. 6 pin male to male	B69	\$ 8.95
Drive/printer 18 ft. 6 pin male to male	B618	\$16.95
Drive/printer 9 ft. 6 pin rt. angle male/male	RA69	\$ 9.95
Drive/printer ext. 6 ft. 6 pin male to female	A66	\$ 6.95
Monitor 6 ft. 5 pin to 4 RCA plugs	M654	\$ 9.95
Monitor 6 ft. 5 pin to 2 RCA plus	M652	\$ 6.95
Monitor ext. 6 ft. 5 pin male to female	ME65	\$ 6.95
Joystick extension 12 ft. male to female	JS12	\$ 7.95
Joystick Y, 1 male to 2 female	JSY	\$ 8.95
Power cable, 6 ft. male to right angle female	PR6	\$ 9.95
Centronics 6 ft. 36 pin male to male	C6MM	\$14.95
Centronics 6 ft. 36 pin male to female	C6MF	\$14.95
Centronics 10 ft. 36 pin male to male	C10M	\$19.95
RS-232 6 ft. 25 pin male to male	R6MM	\$14.95
RS-232 6 ft. 25 pin male to female	R6MF	\$14.95
IBM printer 6 ft. 36 pin/DB25 male to male	IBMP	\$14.95

THE BLACK BOOK of C-128 \$15.95

The best friend a C128 owner ever had... Includes C-64, C-128, CPM 3.0, 1541, 1571 disk drives. 261 pages, each chapter color coded for fast reference, 75 easy to read charts and tables, understandably written. The Black Book of C-128 is very much like a dictionary, always ready to answer your questions.



DISK DOUBLER \$6.95

The original! All metal. Cuts an exact square notch in the disk, same spot every time! Now save data to the back too!

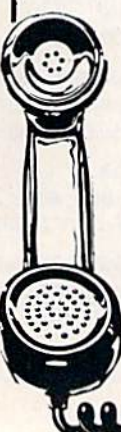


1-800-544-SOFT

For questions or Oregon residents call 503-246-0924

DEALERS & SCHOOLS WELCOME

VSI



NEW VERSION 3.0
FOR C64 & C128
IN 128 MODE.

WIBBLES
WIBBLES

THE

MIRROR

WIBBLES

DISK COPIER

\$24.95

NO FINER OR MORE ADVANCED ARCHIVAL COPIER AVAILABLE AT ANY PRICE.

EASY TO USE. DOES NOT CAUSE DRIVE HEAD TO KNOCK. COPIES UP TO 41 TRACKS.

PERIODIC UPDATE POLICY.

AUTOMATICALLY MAKES BACK-UP COPIES FROM VIRTUALLY ALL PROTECTED SOFTWARE.

NIBBLES, HALF TRACKS, COPIES EXTRA SECTORS AND EXTRA TRACKS. REPRODUCES ALL DISK ERRORS AUTOMATICALLY.

FAST. COPIES FULL DISK IN AS LITTLE AS 4-7 MINS. EVEN COPIES ITSELF.

WE COPY MORE!

MASTERCARD, VISA, M.O. OR CHECK OK

+ \$3 SHIPPING & HANDLING

C.O.D. OR FOREIGN ORDERS ADD \$2

CALIF. ORDERS ADD 6% SALES TAX

— WRITE OR CALL —

Compumed

(408) 758-2436

P.O. BOX 6939

SALINAS, CA 93912

FOR COMMODORE 64 AND 1541 DRIVE
OR COMMODORE 128 AND 1571 DRIVE



Circle 251 on Reader Service card.

THE AMAZING VOICE MASTER®

ENTER
THE FINAL
FRONTIER
OF
MAN-TO-MACHINE
COMMUNICATIONS



There is nothing else like it. Voice Master gives both speech output and voice recognition with this single hardware product! Your voice controls programs, or home appliances, robots, and more with spoken commands. Verbal response back gives status, verifies, or requests your reply! Speech output and recognition patterns are recorded in with your voice. Or use the voice of your friend, boss, teacher, mother, even the family pet! Programming is simple with new commands added to BASIC. A music bonus program lets you write and compose musical scores simply by humming the tune. Unlimited applications for fun, education, and commercial use. Design your own programs for profit. Speech and recognition quality unsurpassed by even the most sophisticated machines. Only Covox provides this high-tech marvel at a price less than most common peripherals.

The Covox Voice Master comes complete with all hardware and software for only \$89.95. (Add \$4 shipping and handling for USA, \$6 Canada, \$10 overseas.) Available for Commodore 64/128, Apple II, II+, IIc, IIe, Atari 800, 800XL, 130 XE. Specify when ordering. Visa, MasterCard phone orders accepted.

Call or write for **FREE Voice Master Infopak**
and special combination package offers.



COVOX INC., DEPT. RN

675-D Conger Street • Eugene, Oregon 97402 • U.S.A.
Area Code (503) 342-1271 • Telex 706017 (Av Alarm UD)

Magic

```
10 REM 64 SCREEN ERASER-CHRIS CHARNETSKI
20 H$=CHR$(19):S$=" ":V$=S$
30 FOR A=1TO23:V$=V$+CHR$(157)+CHR$(17)+S$:
   NEXT:V$=V$+H$
40 FOR A=0TO12:PRINT H$;TAB(A)V$:POKE781,A:
   SYS59903
50 PRINT H$;TAB(39-A)V$:POKE781,24-A:SYS599
   03:NEXT:SYS58692:REM RETURN
```

Christine N. Charnetski
Plains, PA

\$3D1 Easy C-64 border—My short program prints a border on the C-64 screen. Because the program uses Pokes to print the border characters, the border can occupy the edge of the screen, leaving a maximum area for your text and graphics. In line 10, S is the border character and C is its color. As listed, the border character is a reversed space and the color is white.

```
0 REM EASY BORDER-ANDREW D RILEY
10 S=160:C=1:L=1023:PRINT" {SHFT CLR}{CTRL 2
   }":POKE53280,0:POKE53281,0
20 FOR Z=1TO4:READX,Y:FOR I=1TOX:L=L+Y:POKE
   L+54272,C:POKE L,S:NEXT:NEXT
30 DATA 40,1,24,40,39,-1,23,-40
```

Andrew D. Riley
Camden, OH

\$3D2 Ultra hi-res helper—The Ultra Hi-Res Graphics program from the February 1986 issue of *RUN* is fantastic, but trying to draw at the right locations can be a real problem. The Ultra Hi-Res Helper routine to the rescue!

Place the Helper at the end of the Draw statements in your program. When you run your program, use the keypad to move the dot you see on the screen to the location you want, then press the plus key, and the current X and Y locations will be printed on the screen. You can then move to another location and press the plus key again. When you've located all the points, press the minus key to exit the program. If your program already has an error trap at 10000, you can leave out line 10000.

```
1 REM ULTRA HI RES HELPER-J. W. JARVIS
1000 X=320:Y=100
1002 @DOT,X,Y,1:GETKEY K$:K=VAL(K$)
1004 IFK$="+"THEN L$="X="+STR$(X)+" Y="+STR
   $(Y):@CHAR,53248,200,100,1,1,L$
1006 IFK$="-"THEN 10000
1008 IF K=5 OR K=0THEN1002:ELSE @DOT,X,Y,0
1010 IFK=2 THEN Y=Y+1
1012 IFK=8 THEN Y=Y-1
1014 IFK=4 THEN X=X-1
1016 IFK=6 THEN X=X+1
1018 IFK=7 THEN X=X-1:Y=Y-1
1020 IFK=9 THEN X=X+1:Y=Y-1
1022 IFK=3 THEN X=X+1:Y=Y+1
1024 IFK=1 THEN X=X-1:Y=Y+1
1026 GOTO 1002
10000 @TEXT:HELP:END
```

Jerry W. Jarvis
Spokane, WA

\$3D3 Easy eye-catcher—For our users group's computer fair, I altered the White Hole trick (\$358, November 1986), which prints messages on the screen, to generate a continuous display timed by a For-Next loop. It works on both the C-64 and C-128. I made the following changes to the trick:

```
5 PRINT "{SHIFT CLEAR}"
60 FOR X=1 TO 3500:NEXT
70 GOTO 5
```

I then used lines 30-50 for the message. Extra lines can be added to allow several screens of text. The display is easy to write and a real attention-getter!

Harry A. Tellier
Denton, NC

\$3D4 C-128 sprites in ML—As programmers are well aware, programming sprites in machine language on the C-128 can be a headache. To gain complete control over the sprites and sound, consult *C-128 Internals*, published by Abacus Software (Book 1 in its 128 series). It provides the information you need. Just turn off bit 0 of location \$0A04 (2564), and the Basic sprite and sound IRQ will be ignored. Be sure to store the sprite image in a safe location in the C-128. The cassette buffer is at \$0B00, and the area in \$1300-\$1BFF is free for programming use.

Jim Borden
Carlisle, PA

\$3D5 Permanent marker—I find that the best pen for writing on disk labels and many other surfaces is a Resist ink pen. These pens have a porous tip like a felt-tip marker, but the ink is a special lacquer used for drawing on copper-clad circuit boards prior to etching. It's waterproof, smudgeproof and will even write on impossible surfaces like glass and enamel.

Most electronics supply stores carry them under the GC brand. You might also find them in department stores as a laundry marker under the Sharpie brand name.

Dean R. Kazmierczak
North Tonawanda, NY

\$3D6 Typing from right to left on your C-64—I've written a subroutine for my Hebrew tutor programs so the user can type in text from right to left. For entering Hebrew or any language that reads from right to left, this routine is a must. It might also be helpful for certain games.

```
499 REM TYPING RIGHT-LEFT SUB-R.M. HARRIS
500 PRINT CHR$(147):RO=0:CL=39
510 GET V$:IF V$="" THEN 510
520 IF V$="{COMD X}" THEN RETURN:REM EXIT
530 POKE 781,RO:POKE 782,CL
540 POKE 783,0:SYS 65520
550 PRINT V$;
560 CL=CL-1:IF CL<0 THEN CL=39:RO=RO+1
570 GOTO 510
```

Richard M. Harris
Seattle, WA ■

Full Speed



Ahead

Introducing the *Lt. Kernal*®
The Ultimate Hard Disk System
for the Commodore C-64/128®

Featuring:

- * Runs most copy-protected software
- * Supports both C-64 and C-128 modes of operation
- * Forty-two additional or enhanced system commands
- * Disk-access speed more than 100 times faster than the 1541 floppy
- * Automatic power-up execution of any application program
- * Built-in CP/M™-like command-line features
- * Up to eleven logical drives may be defined on the hard disk
- * DOS allows up to seven files to be OPEN for reading and writing simultaneously
- * DOS differentiates between BASIC and machine language programs
- * Built-in backup and restore facilities including FASTCOPY
- * Standard capacity of 20 Megabytes

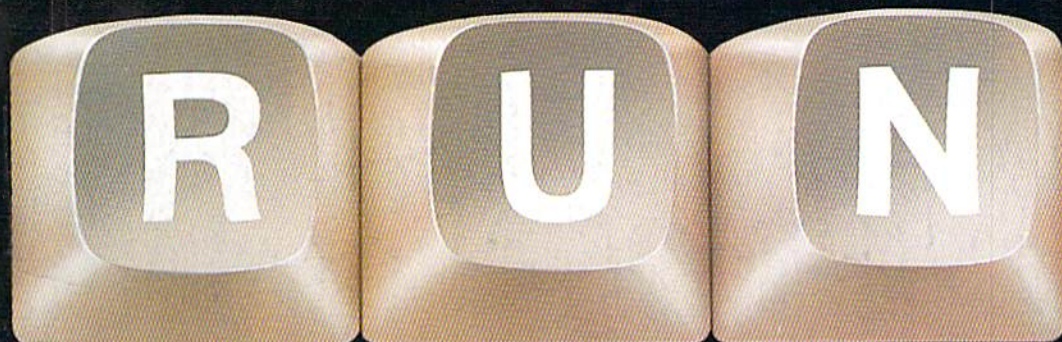
The Lt. Kernal is covered by a one year limited warranty.

C-64 version \$899.95
C-128 version \$949.95

Lt. Kernal is a reg. TM of Fiscal Information, Inc.
C-64/128 are reg. TMs of Commodore Business Machines, Inc.

Xetec, Inc. 2804 Arnold Rd. Salina, Ks. 67401 (913) 827-0685

The Home User's Guide to Commodore Computing



U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

May 1987 A CWC/I Publication

COMMODORE EXEC PREDICTS BRIGHT FUTURE

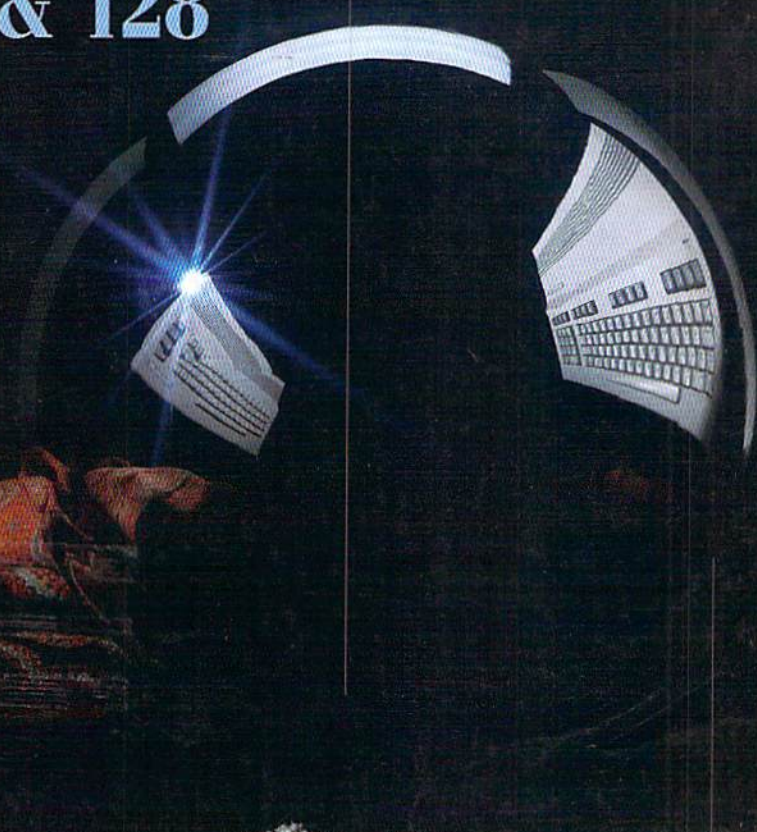
- New Products
- New Strategies
- New Life for 64 & 128

PROGRAM OF THE MONTH

- 128 Windows

PLUS:

- PrintRite 64
- Handy Window
- Sprite-Print
- Disk Stuffer





*Load and run any C-128 program with the run-stop key;
use fancy screen clears in your C-128 programs; make mailers for your
Print Shop creations; and more.*

By JIM BORDEN

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If your idea makes computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or for the C-64 and C-128. Tricks for the C-128 only are not eligible for Trick of the Month.

If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped envelope; you'll receive a copy in two to three weeks.

Trick of the Month

\$3D7 Starting at the bottom—The next time you use RUN's Perfect Typist program to check old listings, start at the end of the listing and work back to the beginning. Checking programs this way prevents the checksum from overwriting the line you check next. After checking the lines on the screen for accuracy, bring down the next group of lines by listing to the line at the top of the screen minus one. For example, if the top line is 5200, type LIST - 5199.

Ching Ko
McPherson, KS

\$3D8 Print Shop mailers—My program prints mailers for the quarter-fold cards created by The Print Shop. It prints a mailer on a sheet of standard paper, then moves to the next sheet so you can print another one. If you own a word processor with a mail-merge option, you can print the mailer outline, then run the paper through a second time and use mail-merge to address it.

```
10 REM PRINT SHOP ENVELOPES-LONNIE BROWN
20 OPEN 4,4:CMD4
30 PRINTSPC(10);:PRINT"!";:FORX=1TO56:PRINT
  "-";:NEXT:PRINT"!";
40 FORZ=2TO12:PRINTSPC(10)"!";:FORX=1TO56:P
  RINT" ";:NEXT:PRINT"!";:NEXT
50 PRINTSPC(4)"!";:FORX=1TO68:PRINT"-";:NE
  XT:PRINT"!";
60 FORZ=14TO39:PRINTSPC(4)"!";:SPC(5)"!";:FOR
  X=1TO56:PRINT" ";:NEXT
70 PRINT"!";:SPC(5)"!";:NEXT
80 PRINTSPC(4);:PRINT"!";:FORX=1TO68:PRINT
  "-";:NEXT:PRINT"!";
90 FORZ=40TO59:PRINTSPC(10)"!";:FORX=1TO56:
  PRINT" ";:NEXT:PRINT"!";:NEXT
100 PRINTSPC(10);:PRINT"!";:FORX=1TO56:PRIN
  T"-";:NEXT:PRINT"!";
110 FORX=1TO4:PRINT#4:NEXT:CLOSE4
```

Lonnie Brown
Lakeland, FL

\$3D9 Checking the checksum—If you're typing in a program that contains Data statements and a built-in checksum, there's an easy way to check for errors without executing the program. Find the line that contains the Poke and delete it. Also, put a Stop command just after the line that checks the value of the checksum. Then run the program.

If the checksum generates an Error message, find the mistake in the Data statements and make the needed changes, and then run the program again. If you get another error message, look for another mistake. When you run the program and get a Break message in the line that holds the checksum, you know your data is correct. Then type the Poke command (with variables) back

in, remove the Stop command you added and save the program.

Stan Jones
Fairbanks, AK

\$3DA Basic REF statement—I've found that including the source of a program I've gotten from a magazine in a REM statement at the beginning of the listing saves me time when I need to reference the source. I include the name of the magazine, the issue and the page on which the program begins.

Rodney L. Praegitzer
APO, NY

\$3DB C-128 Automatic Load/Run menu—Imagine loading and running any disk-based program without typing in the Load and Run commands and the filename. This three-liner uses only the shifted run-stop and return keys to load and run programs.

Save my program as the first program on your disk. Then, each time you use the disk, press shifted run-stop to display the directory on the screen, move the cursor to the line with the program you want to run and press return. *Presto!* Your program loads and runs like magic! If your menu fills more than one screen, press the stop key, type CONT, press return and repeat the procedure above.

I added screen colors to the automenu program; you may change the color values to suit your tastes.

```
10 PRINT "{SHIFT CLR}"CHR$(27)"M":REM 128 MEN
   U LOAD-LON D. OLSON
20 SCNCLR:BG=16:BO=15:CH=12:COLOR0,BG:COLOR
   4,BO:COLOR5,CH:DIRECTORY:INPUTA$:I=0
30 I=I+1:B$=MID$(A$,I,1):IFB$=CHR$(34)THEN4
   0:ELSE GOTO30
40 I=I+1:C$=MID$(A$,I,1):IFC$=CHR$(34)THENP
   RINTCHR$(27)"L":RUN (D$):ELSE D$=D$+C$:G
   OTO40
```

Lon D. Olson
Mesa, AZ

\$3DC C-128 custom characters—Here's help for those of you who use custom characters on the C-64 but are having trouble with them on the C-128. To use them on the 128, you must first copy the ROM character set at locations 53248-55295 into RAM at 14336-16383 and then set bits 1, 2 and 3 of location 2604 to 1. This tells the 128 to look for characters beginning at 14336 in RAM.

Since Basic normally uses the area where the RAM characters will be, you need a GRAPHIC1:GRAPHIC0 command to move the start-of-Basic safely above this area and switch back to 40-Column mode. Don't use a hi-res screen, or the character set will be ruined.

The following program redefines the @ character to an up arrow.

```
10 REM 128 CUSTOM CHARS-NELSON SEARCY
20 GRAPHIC1:GRAPHIC0:REM FOR 40 COL ONLY
30 POKE 2604,30:POKE217,4:FAST
40 BANK14:FOR A=53248 TO 55295:B=PEEK(A):PO
```

```
KEA-38912,B:NEXT:BANK0:SLOW
50 FORA=14336 TO 14343:READ B:POKEA,B:NEXT:
REM "@ TO {UP ARROW}"
60 DATA 0,24,60,126,24,24,24,24
```

Nelson Searcy
Forest City, NC

\$3DD Better than a Basic loader—If you have some utilities in the form of Basic loaders (with Read and Poke statements and many Data lines), you can load, run and save them directly to memory with an ML monitor. Then you can load the programs directly with LOAD "program",8,1. Look at the C-64 Wedge program on your copy of the 1541 demo disk for an example. It loads your utilities much faster, since they don't have to be read and poked by Basic.

Rolf Stein
Naucalpan, Edo. Mexico, Mexico

\$3DE Flipping faster through GEOS disk directories—One undocumented feature of GEOS lets you view the pages of a disk directory in Icon mode without the joystick. Just press the control key and the number key corresponding to the page number you wish to see.

Henry H. Tolbert
Marietta, GA

\$3DF GEOS and the restore key—When you exit from GEOS to Basic, the restore key is redefined to reboot GEOS. You can eliminate this function either by typing POKE 792,71 and pressing return or by turning the computer off and on again.

R. V. Taylor
Little Rock, AR

\$3E0 A Star with GEOS—Use your Star SG-10 printer with GEOS by setting the dip switches to the On position.

Mark L. Ellis
Germantown, TN

\$3E1 RUN Script default file—Forgetting to give your document a filename when saving it in RUN Script 2.40 makes the program save the file with the default load name, " ", as the filename. Take advantage of this "error" by giving the default load name to a file you use often. Then, to load it, you just have to press F1 and L. When you want to scratch the file from RUN Script, use a question mark as the filename. Just be sure no other single-character filenames are on the disk, or they'll be erased, too.

Jim Borden
Carlisle, PA

\$3E2 Decimal to binary converter—My one-line program converts decimal numbers 0-255 to their binary equivalents.

```
1 REM DEC TO BIN-JAMES R SCHWARTZ
10 INPUT D:FORI=7TO0STEP-1:B$=B$+MID$(STR$(
```


Magic

Listing continued.

```
SGN(D AND 2(UP ARROW)I)),2):NEXT:B=VAL(B$):PRINTB
```

James R. Schwartz
Michigan City, IN

\$3E3 C-128 fancy screen clears—My program contains a number of subroutines to clear your C-128's screen in fancy ways. Line 200 in the program fills the screen to demonstrate the effect; you need to eliminate that line in your programs.

```
0 REM C-128 40-COL SCREEN CLR - RAY SONIER
10 PRINT "{2 HOMES}{SHFT CLR}":CHAR 1,15,1,"
  ENTER 1-7"+CHR$(13)
15 GETKEY A$:Z=INSTR("1234567",A$):ON Z GOT
  O 20,30,40,50,60,70,80:GOTO15
20 GOSUB200:FOR A=0TO19:WINDOW 19-A,0,20+A,
  24,1:NEXT:GOTO10
30 GOSUB200:FOR A=0TO12:WINDOW 0,12-A,39,12
  +A,1:NEXT:GOTO10
40 GOSUB200:X=24:FOR A=35 TO 0 STEP-5:X=X-3
  :WINDOW A,X,39,24,1:NEXT:GOTO 10
50 GOSUB200:X=0:FOR A=4TO39 STEP5:X=X+3:WIN
  DOW 0,0,A,X,1:NEXT:GOTO10
60 GOSUB200:FOR A=0TO12:WINDOW 12-A,12-A,27
  +A,12+A,1:NEXT:GOTO10
70 GOSUB200:FOR A=0TO39:WINDOW A,0,A,24,1:N
  EXT:WINDOW 0,0,39,24,0:GOTO 10
80 GOSUB 200:FOR A=0TO39:WINDOW39-A,0,39-A,
  24,1:NEXT:WINDOW 0,0,39,24,0:GOTO 10
200 FOR X=1TO25:PRINT"*****"
  *****":NEXT:RETURN
```

Ray Sonier
Bremerton, WA

\$3E4 C-128 multiple directories—I've got an easy way to put two directories side by side on the 80-column screen. First, clear the screen, then issue a Directory command for the first disk. Then home the cursor and press the tab key five times. Next, press ESC T to set the top of a new window. Put your second disk in the drive and ask for a directory again. The directories will appear side by side. You can also use this procedure to compare program lines.

Al Blakey
Barre, VT

\$3E5 M-i-c-k-e-y M-o-u-s-e—If you'd love to see your young child's face light up, load my program into your C-128 in 40-Column mode and type run, but don't press return yet. Place your toddler in front of the monitor screen, then press the return key. A picture of Mickey will be drawn right before your child's eyes!

```
10 REM C128 MICKEY MOUSE-RALPH SCHWARZ
50 COLOR0,2:COLOR1,1:COLOR2,8:COLOR3,3:COLO
  R4,2:GRAPHIC3,1
60 CIRCLE1,38,33,22,33:CIRCLE1,122,33,22,33
70 CIRCLE1,80,109,41,70,250,110:CIRCLE1,68,
  152,32,35,183,334
80 CIRCLE1,92,152,32,35,26,177:CIRCLE1,80,1
  70,18,28,105,255
```

```
90 CIRCLE1,68,96,8,24:CIRCLE1,92,96,8,24
100 CIRCLE1,68,105,4,12:CIRCLE1,92,105,4,12
110 CIRCLE1,66,80,9,20,270,25:CIRCLE1,94,80
  ,9,20,335,90
120 CIRCLE1,58,92,10,34,213,340:CIRCLE1,102
  ,92,10,34,20,147
130 CIRCLE1,65,80,15,29,310,80:CIRCLE1,95,8
  0,15,29,280,50
140 CIRCLE1,80,109,30,55,118,242:CIRCLE1,60
  ,152,12,20,290,358
150 CIRCLE1,100,152,12,18,2,70:CIRCLE1,80,1
  60,35,38,332,28
160 CIRCLE1,80,160,13,22,90,270:CIRCLE1,76,
  178,8,9,310,70
170 CIRCLE1,86,178,8,9,325,35:CIRCLE1,80,13
  7,12,12
180 CIRCLE1,79,134,6,4:CIRCLE1,30,187,30,20
  ,90,200
190 CIRCLE1,130,187,30,20,140,270:CIRCLE1,3
  2,200,37,40,75,90
200 CIRCLE1,128,200,37,40,270,285:PAINT1,77
  ,199
210 PAINT1,42,109:PAINT1,80,147
220 PAINT1,80,165:PAINT3,65,198,1
230 PAINT3,95,198,1:PAINT3,80,175,1
240 PAINT1,40,33:PAINT1,120,33
250 PAINT1,68,105:PAINT1,92,105
260 PAINT2,70,152,1
```

Ralph Schwarz
Rexdale, Ontario, Canada

\$3E6 Commodore Kentucky Derby—You needn't wait till May to catch triple-crown fever. My program, which runs on the C-64 and the C-128 (in 40-Column mode), simulates a thoroughbred race with a field of seven horses and generates odds for each horse. The program gives you \$500 for betting, and the races continue until you run out of money or quit with the stop key.

```
0 REM DARBEE BY PHILIP GEISER
1 M=500:POKE53280,6:POKE53281,6
2 PRINTCHR$(142)" {SHFT CLR} {4 SPACES} {CTRL
  8} {CTRL 9} KAINUCKEE DARBEE {CTRL 0}"
3 FORO=1TO7:O(O)=INT(RND(1)*26+1):PRINT "{CO
  MD 5} {CTRL 9} HORSE"O "{CRSR LF} {CTRL 0}
  ODDS ARE"O(O)"TO 1"
4 PRINT "{CTRL 2} {PI} {CRSR DN}":NEXT:FORO=1
  TO7:P(O)=0:NEXT:PRINT:PRINT "{2 CRSR UPS}
  {CTRL 9} YOU HAVE $"M
5 INPUT "{2 SPACES}-WHAT HORSE TO BET ON";H:
  IFH>7ORH<1THENPRINT "{2 CRSR UPS}":GOTO5
6 INPUT "{2 SPACES}-HOW MUCH MONEY TO BET";B:
  IFB>MTHENPRINT "{2 CRSR UPS}":GOTO6
7 X=INT(RND(1)*7+1):P(X)=P(X)+1
8 PRINT "{HOME}";:FORD=1TOX*3-1:PRINT "{CRSR
  DN}";:NEXT:FORP=1TOP(X):PRINT " ";:NEXT:PR
  INT "{CTRL 2} {PI}"
9 IFP(X)=39THENPRINT "{HOME}"TAB(24)" {CTRL 9
  } WINNER IS #"X:GOTO11
10 GOTO7
11 IFX<>HTHEN13
12 M=M-B+B*O(X):FORQ=1TO3000:NEXT:GOTO2
13 M=M-B:FORQ=1TO3000:NEXT:IFM<=0THENPRINT"
  {SHFT CLR} {CTRL 9} * * YOU ARE OUT OF MON
  EY * *":END
14 GOTO2
```

Philip Geiser
Stronghurst, IL

The COMMODORE C-128/C-64 Home Computing Guide

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

R U N

June 1987 A CWCIT Publication

LOOK WHAT'S NEW FROM COMMODORE... A PC CLONE!

Program of the Month

► 64 Notepad Command Center

Plus:

► A Better Basic Debugger

► Power Keys

► Robotgraph

► Presto Write 128





*Print out hard copies from within the C-128's monitor;
add a bi-directional printing effect to your screen titles; add a pause
feature to your Fastload directories; tune your guitar;
address business-size envelopes; and more.*

By JIM BORDEN

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for C-128 mode only are not eligible for Trick of the Month.

If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped envelope; you'll receive a copy in two or three weeks.

\$3E7 Shortest file-reader—Here's a one-liner for reading sequential files. It should work with any Commodore computer. In the line below, change "filename" to the name of your sequential file and type in RUN. It will open the file, display its contents on the screen and close the file when finished.

```
1 REM FILE READER-R. W. BENJAMIN
2 OPEN8,8,8,"FILENAME":FORI=0TO1:GET#8,A$:
  I=ST:PRINTA$;:NEXT:CLOSE8:END
```

Robert W. Benjamin
Wysox, PA

\$3E8 128 instant directory display—I have a way to instantly call up a directory display without interrupting any work I'm doing in 64 mode. Before going to 64 mode, I load the disk directory I'll be working with to the 128's 80-column screen. When I need to view the directory, I simply switch my monitor to 80-Column mode.

Al Blakey
Barre, VT

Trick of the Month

\$3E9 Help-file reader—In order to print a help screen within a program I was writing, I needed a routine like C-128 GETspeed (Magic trick \$378, RUN, December 1986), but altered so it wouldn't interfere with the program in memory. I also had to relocate the code so I could use cassette or disk. I chose \$1300 (decimal 4864) as the starting location and made these changes to the original program:

```
10 REM HELP FILES-RICHARD HERRMANN
20 FORI=4864TO4918:READT:POKEI,T:CK=CK+T:N
  EXT
30 IFCK<>7665THENPRINT"ERROR":END
40 DATA 160,0,185,64,19,240,3,200
50 DATA 208,248,152,162,64,160,19,32
60 DATA 189,255,169,5,168,162,8,32
70 DATA 186,255,32,192,255,162,5,32
80 DATA 198,255,32,207,255,32,210,255
90 DATA 32,183,255,240,245,32,204,255
100 DATA 169,5,32,195,255,96,00
19999 END
20000 FOR I=1TOLEN(H$):POKE 4927+I,ASC(MID
  $(H$,I,1)):NEXT
20010 POKE 4927+I,0:SYS4864:GETKEY K$:RETU
  RN
20020 REM END FILENAME:CALL ML:WAIT FOR KE
  YPRESS
```

The subroutine at 20000 pokes the filename into memory for the machine language code. Of course, you must run lines 20-100 above before accessing the File Reader subroutine. An example of how to use the program, assuming that you name your help file Helpfile, is shown below:

```
1000 GETKEY Q$:IF Q$="{CTRL H}" THEN
  H$="HELFILE":GOSUB20000
```

I hope other readers find this trick as useful as I have.

Richard Herrmann
Brookhaven, NY

\$3EA Customized DOS Wedge for your C-64—Here's a way to customize the DOS 5.1 Basic loader. Save the follow-

Magic

ing program with the filename "I"; be sure the DOS 5.1 ML program is also added to your disk.

```
Ø REM DOS LOADER+ BY KARL JOHNSON
1Ø IFA=ØTHENA=1:LOAD"DOS 5.1",8,1
2Ø OPEN1,8,15:PRINT#1,"M-W"CHR$(1Ø6)CHR$(Ø)
  )CHR$(1)CHR$(133):CLOSE1
3Ø FORJ=679TO688:READK:POKEJ,K:NEXT:POKE77
  4,167:POKE775,2
4Ø SYS 52224:PRINT"{SHFT CLR}{CTRL 2}"
5Ø POKE5328Ø,12:POKE53281,Ø:FORJ=631TO634:
  READK:POKEJ,K:NEXT:POKE198,4:NEW
6Ø DATA 72,173,141,2,2Ø8,251,1Ø4,76,26,167
  ,177,36,48,13
```

Then load and run the program (see p. 28 of the February 1986 *RUN* for a summary of the DOS Wedge commands).

Now you're ready to perform some time-saving magic. Type in this line:

```
L{SHFT O} "I",8:{SHFT RUN-STOP}
```

Like magic, the Wedge and Pause features are loaded and ready to use.

The program also lists the disk's directory so that you can run any Basic program by moving the cursor up to the filename, typing an up arrow and pressing return. Line 20 reduces the head-knocking caused by some copy-protection schemes. You can freeze a scrolling screen with either the control, Commodore, shift or shift-lock key. Release the key when you're ready to continue.

Karl Johnson
Houston, TX

\$3EB More automatic Auto Menu—Those of you who use Auto Menu (*RUN*, April 1986) to load and run your programs might want to make it self-running by modifying it with the Auto-Run program (*RUN*, January 1986). By making Auto Menu a self-running program, you need only enter LOAD"AUTO MENU",8,1. The program will then run itself and allow you to load and run other programs with a single keystroke.

Eddie L. Phipps
Moore, OK

\$3EC Monitor hearing aid—For about \$15, you can add sound to your video-only monitor with an audio cable plug, a Radio Shack amplifier-speaker (part #277-1008B) and an adapter (part #274-330).

Nelson Hamblin
Edgar, NE

\$3ED Easy C-128 temporary saves—When you're typing in program listings, it's a good idea to save the program lines to disk every 15 minutes or so. I like the way Perfect Typist saves programs for me by adding this line to it:

```
9 KEY1,"SC{SHFT R}" + CHR$(34) + "Z" + CHR$(34) + ":D{SHFT
  S}" + CHR$(34) + "Z" + CHR$(13)
```

When you press F1, answer the prompt with a Y and press return. Perfect Typist will replace the old version of the program with the new version and the filename Z. After you've typed in the program, use the Rename command to change the program's name to one that's more descriptive.

If you'd like to make the scratch automatic, use the following line instead:

```
9 KEY1,"SC{SHFT R}" + CHR$(34) + "Z" + CHR$(34) + CHR$(13) +
  "Y" + CHR$(13) + ":D{SHFT S}" + CHR$(34) + "Z" + CHR$(13)
```

MSgt John R. Stevenson
APO New York, NY

\$3EE C-128 ML monitor hard copy—The *C-128 System Guide* doesn't outline a method for printing hard copies from the built-in monitor. Use the following steps to get a printout.

First list the machine language program you want to print out and note the sections you want to disassemble or dump as memory. Exit the monitor with the X key, then type in OPEN 4,4:CMD 4,"";:MONITOR. Send the sections, along with the starting and ending addresses, to the printer by typing in D for Disassembly or M for Memory Dump. After all sections are listed, exit the monitor and type PRINT#4:CLOSE4 to restore the screen as the output device.

If your video monitor or TV is the 40-column-only type, the memory dumps will only print eight bytes per line to the screen and printer. You can use ESC X to switch to 80-Column mode and type the memory dump addresses without seeing what you type. This will print 16 bytes per line on the printer. Be careful typing, since you can't see the 80-column text with a 40-column-only video monitor.

Frank Harbin
Mobile, AL

\$3EF Bi-directional screen printer—My bi-directional printing program adds a special touch of magic to your screen titles. You can also use this technique to enhance game scenarios, help messages, even menus.

You can vary the printing speeds by increasing or decreasing the time delay loops in lines 120 and 150, respectively. This program should work on any Commodore computer with a 40-column monitor. If you use 80 columns, change 40 to 80 in line 180.

```
1Ø REM SCREEN TITLES - SUSAN CHARNETSKI
2Ø RVS=1:PRINT"{SHFT CLR}{8 CRSR DNs}"
3Ø A$="*{3 SPACES}* ***** * *****":G
  OSUB1ØØ
4Ø A$="** * *{3 SPACES}* *{5 SPACES}* *{4
  SPACES}":GOSUB13Ø
5Ø A$="* * * * ***** *{2 SPACES}* * *{4 SPA
  CES}":GOSUB1ØØ
6Ø A$="*{3 SPACES}* *{3 SPACES}* *{3 SPACE
  s}* *{4 SPACES}":GOSUB13Ø
7Ø A$="*{3 SPACES}* *{3 SPACES}* ***** *
  *****":GOSUB1ØØ
8Ø A$=" BY SUSAN CHARNETSKI "
9Ø RVS=Ø:PRINT:GOSUB13Ø:END
1ØØ GOSUB18Ø:GOSUB16Ø:FORLR=1TON
11Ø PRINTTAB(LR+X)MID$(A$,LR,1);
12Ø FORTD=1TO3Ø:NEXT:NEXT:PRINT:RETURN
13Ø GOSUB18Ø:FORRL=NTØ1STEP-1:GOSUB16Ø
14Ø PRINTTAB(RL+X)MID$(A$,RL,1);"{CRSR UP}
  "
15Ø FORTD=1TO25:NEXT:NEXT:PRINT:RETURN
16Ø IFRVS=1THENPRINT"{CTRL 9}";
17Ø RETURN
18Ø N=LEN(A$):X=(4Ø-N)/2-1:RETURN
```

Susan M. Charnetski
Plains, PA

Continued on p. 88.

Magic *From p. 12.*

\$3F0 Kaleidoscope—Turn your C-128's 40-column screen into an electronic kaleidoscope. The program will run until you press any key.

```
0 REM KALEIDOSCOPE - ROBERT BIXBY
10 GRAPHIC3,1:SCALE1,640,200:COLOR0,1
20 A=INT(RND(TI)*320):B=INT(RND(TI)*200):C
   =INT(RND(TI)*320):D=INT(RND(TI)*200):DRAWI,A,B
   AW1,A,BTOC,D
30 FORI=1TO3:COLORI,RND(TI)*16+1:DRAWI,A,B
   TOC,D
40 DRAWI,319-A,199-BTO319-C,199-D
50 DRAWI,319-A,BTO319-C,D
60 DRAWI,A,199-BTOC,199-D:A=C:B=D:C=INT(RN
   D(TI)*320):D=INT(RND(TI)*200):COLORI,RN
   D(TI)*16+1:NEXT:GET A$:IF A$="" GOTO30:
   ELSE GRAPHIC 0:COLOR5,2:END
```

Robert Bixby
Kalamazoo, MI

\$3F1 Magic number-guesser—Amuse and mystify your friends with my magic number-guesser program. Just follow the prompts on the screen.

```
10 REM MAGIC NUMBER-NEVIN FAHS
20 PRINT"{SHIFT CLR}(2 CURSOR DNs)FOR FURTHER
   INSTRUCTIONS PRESS ANY KEY"
30 PRINT"WRITE DOWN ANY 5 DIGIT RANDOM NUM
   BER":GOSUB110
40 PRINT"NOW RE-ARRANGE THE DIGITS IN ANY
   ORDER{2 SPACES}";
50 PRINT"AND SUBTRACT SMALLER FROM LARGER
   .":GOSUB110
60 PRINT"CROSS OUT ANY DIGIT (EXCEPT ZERO)
   AND{3 SPACES}TYPE IN THE REMAINING NUM
   BER"
70 INPUT A$
80 FORI=1TO4:X=X+VAL(MID$(A$,I,1)):NEXT
90 X=X-INT(X/9)*9
100 Y=9-X:PRINT"{SHIFT CLR}THE NUMBER YOU C
   ROSSED OUT WAS"Y:END
110 GET S$:IF S$=""THEN110
120 PRINT:RETURN
```

Nevin Fahs
Honolulu, HI

\$3F2 Fastload directory pause—Directories longer than 25 lines are difficult to view with the Fastload cartridge, since there's no provision for pausing the screen. To pause the directory listing, load the directory as a Basic file with the command /\$ and list it. Slow down the scrolling listing with the Commodore key and pause it with the stop key. Of course, this method will overwrite any program in memory when the directory is loaded.

Rudy McDaniel
APO New York, NY

\$3F3 Guitar-tuning aid—This C-64 program produces reference tones by which to adjust the string tensions on your guitar. Each reference tone continues to sound until you press the space bar for the next tone.

```
10 PRINT"{SHIFT CLR}C-64 GUITAR TUNING AID
   - J.R.CHARNETSKI"
```

```
20 FORI=1TO6:READL(I),H(I):NEXT
30 R=54272:FORI=RTOR+23:POKEI,0:NEXT
40 POKER+5,102:POKER+6,102:POKER+24,15
50 PRINT"{2 CURSOR DNs}PRESS{CURSOR DN}"
60 PRINT"ANY KEY TO TURN SOUND ON OR OFF"
70 PRINT"SPACE BAR FOR NEXT STRING SOUND"
80 PRINT"ANY FUNCTION KEY TO END PROGRAM"
90 GET A$:IF A$=""THEN90
100 POKER+4,0
110 IFA$=CHR$(32)THENI=I+1:GOTO140
120 IFA$>CHR$(132) AND A$<CHR$(141)THENPOK
   ER+24,0:END
130 IF X THEN X=0:GOTO90
140 IFI>6THENI=1
150 POKER,L(I):POKER+1,H(I)
160 POKER+4,33:X=I:GOTO90
170 DATA 71,5,12,7,104,9,142,12,210,15,30,
   21
```

Joseph R. Charnetski
Dallas, PA

\$3F4 Envelope addresser—Here's a program to address business-size envelopes. I use it each month when paying bills and sending letters to friends. Once you save the program, load and list it, change the lines to the address you need and save it under a new name. When you run the program, it will print your return address first and then the recipient's address.

```
0 REM ENVELOPE ADDRESSER-JUDY ROBERTS
10 OPEN1,4:CMD1,"";
20 PRINT"{SHIFT Y}OUR ADDRESS HERE"
30 PRINT"{SHIFT Y}OUR STREET"
40 PRINT"{SHIFT C}ITY,{SHIFT S}TATE ZIP"
50 FORX=1TO8:PRINT:NEXT
60 PRINTSPC(30){SHIFT A}DDRESSEE'S NAME"
70 PRINTSPC(30){SHIFT A}DDRESSEE'S STREET"
80 PRINTSPC(30){SHIFT A}DDRESSEE'S CITY, S
   TATE, ZIP"
90 PRINT#1:CLOSE1
```

Judy Roberts
Phelps, KY

\$3F5 Here comes the bride—This program is dedicated to all you romantic people out there. After the program ends, press any key to exit Graphic mode.

```
10 REM WEDDING RING -JASON HANRAHAN
20 GRAPHIC 1,1,24:COLOR0,1:COLOR4,1:COLOR1
   ,8
30 FOR X=196 TO 208:CIRCLE 1,X,125,35,57:
   NEXT
40 DRAW 1,200,68 TO 208,68 TO 200,58 TO 19
   6,68 TO 200,68
50 DRAW 1,208,68 TO 216,48 TO 200,58
60 DRAW 1,208,68 TO 224,45 TO 216,48
70 DRAW 1,196,68 TO 188,48 TO 204,58
80 DRAW 1,196,68 TO 176,45 TO 188,48
90 DRAW 1,176,45 TO 192,40 TO 188,48 TO 21
   6,48
100 DRAW 1,192,40 TO 202,48 TO 212,40 TO21
   6,48
110 DRAW 1,192,40 TO 212,40
120 DRAW 1,212,40 TO 224,45
130 GETKEY A$:GRAPHIC0
```

Jason Hanrahan
Whitetail, MT ■



GEOS—One Year Later

Outline Your Thoughts with Software

RUN

THE COMMODORE 64/128 USER'S GUIDE

July 1987

A CWC/I Publication

U.S.A. \$2.95

CANADA \$3.95

U.K. £2.00

MAKING MUSIC WITH MIDI

Hardware Companions:

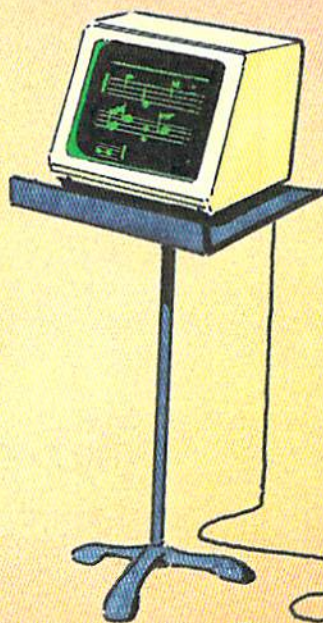
- Commodore's New Mouse
- RAM Expander
- FSD-2 Disk Drive

Program of the Month

- Attention, Shoppers!

Plus

- C-128 Linker
- Input Sentry 64
- Tri-Solitaire
- Electronic Flash Cards



A. BARUFFI '87



MAGIC

Give your C-128's screen editor a cut-and-paste feature; play a word-scrambling game; speed up your C-64's cursor movements; make your screen titles fade in and out; and more. compiled by JIM BORDEN

\$3F6 C-128 PARTIAL DIRECTORIES

When I want to print part of a disk directory that I've just loaded, I first enter the Renumber command, list the directory and delete any unwanted text. Then I print it out with OPEN4,4:CMD4:LIST. The only disadvantage is that the block count for the files will be incorrect.

—ADAM KAPLAN, ADDRESS UNKNOWN

\$3F7 CUT-AND-PASTE C-128 BASIC EDITING

Modifying the C-128's screen editor with the line below enables your computer to "cut out" part of one program line and "paste" it into another. Type:

```
KEY 1,CHR$(27)+"P{5 CRSR LFs}KEY4,"  
+CHR$(34)+CHR$(13)
```

and press return. Now move the cursor to the character before the text you want to grab and press F1. Then move the cursor to the point you want to insert the text and press F4. The text will pop into place.

Keep in mind that the text you want to move cannot contain quotes, and it must start at column 6 or beyond to allow the KEY4," command to fit in front of the text.

—CONSTANTINO GROSSE, PHILADELPHIA, PA

\$3F9 BASIC-BLOCKS-FREE FINDER

If you need to know how much room is left on a disk while you're running a Basic program, just include this short subroutine. It should work with any Commodore computer. You'll have the answer along with the diskname almost instantly. Keep in mind that with double-sided disks formatted for the 1571 but being used in 1541 mode (or in a 1541 drive), the subroutine will show you only the blocks free on the single side.

```
10 REM BLOCKS FREE FINDER-J.R.CHARNETSKI  
20 OPEN1,8,15,"I0:" : OPEN8,8,0,"$0:"  
30 FORJ=1TO18:GET#8,A$,B$:C$=C$+A$+B$  
40 NEXT:CLOSE8  
50 B=ASC(A$+CHR$(0))+256*ASC(B$+CHR$(0))  
60 PRINT B;"BLOCKS FREE"  
70 PRINT"ON DISK: ";MID$(C$,7,16)  
80 PRINT#1,"UJ":FORZ=1TO1000:NEXT  
90 CLOSE1:REM RETURN
```

—JOSEPH R. CHARNETSKI, DALLAS, PA

\$3FA GEOS FILE DANGER

Leaving a GEOS, GEOS Boot or GEOS Kernal file on the Desktop will prevent your C-64 from loading files properly, ►

TRICK OF THE MONTH

\$3F8 C-64 DIRECTORY NAME ARRAY

The program below reads a disk directory, places each of the filenames into a one-dimensional array and prints out the filenames, using Basic code.

After you load and run the loader program, be sure to dimension a string array for the filenames as the first array in your program. Then call up the program with SYS828, which reads the filenames into the array with the number of files stored in location 254.

Here's an example of how to use the program, assuming the loader was run to poke the machine language into memory:

```
10 DIM A$(144):SYS 828:E=PEEK(254)  
20 FOR C=1TOE:PRINT A$(C):NEXT:END
```

The program quickly reads the names into the array. The names are actually stored in the "free" area at 49152 (\$C000), so you can store the array without using any of Basic's memory.

```
10 REM C-64 DIRECTORY READER-MARK NEWTON  
15 C=0:FORA=828TO1006:READ B:POKE A,B:C=C+  
B:NEXT
```

```
20 IF C<>22602 THEN PRINT"DATA ERROR..."  
25 DATA 169,14,162,8,160,0,32,186,255,169,  
4,162,235,160,3,32,189,255,32,192  
30 DATA 255,162,14,32,198,255,160,0,140,57  
3,132,250,140,56,3,165,48,133  
35 DATA 254,24,165,47,105,7,144,2,230,254,  
133,253,169,0,133,251,169,192,133  
40 DATA 252,160,1,32,207,255,166,144,240,1  
5,32,204,255,169,14,32,195,255  
45 DATA 172,56,3,136,132,254,96,192,6,144,  
45,201,34,208,10,173,57,3,73,1  
50 DATA 141,57,3,16,31,174,57,3,208,30,192  
32,208,22,160,0,165,250,145,253  
55 DATA 132,250,24,165,253,105,3,144,2,230  
254,133,253,76,119,3,200,76,121  
60 DATA 3,140,59,3,160,0,145,251,165,250,2  
08,14,160,1,165,251,145,253,200  
65 DATA 165,252,145,253,238,56,3,230,250,1  
72,59,3,230,251,208,2,230,252,76  
70 DATA 166,3,36,48,58,42
```

—MARK E. NEWTON, JAMESTOWN, IN

and it can also keep the master disk from booting. You can avoid this problem by never leaving a file on the Desktop when you close the master disk.

—ROBERT M. ROBY, WHITEMAN AFB, MO

\$3FB BLOCKS REQUIRED

If you regularly fill up the space on your disks, then enter the line below for your computer. It will tell you how many blocks are required to save a program.

For the C-64 use:

```
X=PEEK(45)+256*PEEK(46)-2049:PRINT INT(X/254)+1
"DISK BLOCKS REQ'D"
```

For the C-128 use:

```
GRAPHIC CLR:X=58109-FRE(0):PRINT INT(X/254)+1
"DISK BLOCKS REQ'D"
```

For the C-64, X calculates the end of your Basic program and subtracts the starting address (2049) from it. The C-128 version is easier to calculate, since all of Bank 0 except 7427 bytes are available for program storage.

—JEFF ROSS, NEWARK, DE

\$3FC WORD MIXER

Here's a short program that scrambles the letters in words and prints them out to use in a word game. Load and run the program and input up to 20 words from a selected topic. The scrambled words will be printed on one sheet of paper and the answers on the next sheet. The program should work with any Commodore computer/printer combination. However, for non-Commodore printers, you might have to use CHR\$(95) in line 40. (Here's a challenge for you word wizards: Can you create an anagram program?)

```
0 PRINT "{SHIFT CLR}{4 CRSR DNs}{7 SPACES}*
WORD MIXER BY T J RYAN *"
10 INPUT "{4 CRSR DNs}{5 SPACES}TOPIC";T$
20 INPUT "{CRSR DN} # OF WORDS";N:IFN>20TH
ENPRINT "20 WORDS MAX!":GOTO20
30 DIM B(30),J$(N),L$(30),W$(N)
40 FOR J=1TO20:B$=B$+CHR$(95):NEXT
50 FORW=1TON:PRINT "{CRSR DN} WORD #";W;:IN
PUT W$
60 L=LEN(W$):W$(W)=W$:FORK=1TOL:L$(K)=MID$
(W$,K,1):B(K)=K:NEXT
70 FORK=1TOL:D=INT(RND(1)*L+1):E=INT(RND(1)
)*L+1:T=B(D):B(D)=B(E):B(E)=T:NEXT
80 FORK=1TOL:J$(W)=J$(W)+L$(B(K)):NEXT:NEX
T
90 OPEN4,4:CMD4:REM SEND WORDS TO PRINTER
100 PRINT SPC((80-LEN(T$))/2);T$:PRINT
110 PRINT:PRINT:FORJ=1TON:PRINTSPC(30-LEN(
J$(J)));J$(J);"{2 SPACES}";B$:PRINT:NE
XT
120 FORJ=1TO61-2*N:PRINT:NEXT:FORJ=1TON:PR
INT W$(J):NEXT
130 PRINT#4:CLOSE4
```

—T. J. RYAN, NORWOOD, OH

\$3FD FASTER FRACTION ACTION

The program below converts terminating decimals into common fractions in lowest terms more quickly than Magic Trick \$3B8 (p. 12, RUN, March 1987). It takes advantage of the fact that terminating decimal fractions can be reduced only by dividing by powers of 2 and 5. This saves the time of fruitless division by other integers. The program should work on all Commodore computers.

```
10 REM FAST COMMON FRACTIONS-B. HICKERSON
20 INPUT "GIVE ME A DEC. NO. ";N$
30 FORX=1TOLEN(N$)
40 IFMID$(N$,X,1)="." THENFLAG=1:D=X
50 NEXT:IFVAL(N$)=0 THEN END
60 IF FLAG<>1 THENPRINT N$:GOTO20
70 L$=LEFT$(N$,D-1):R$=RIGHT$(N$,LEN(N$)-D
)
80 T$="1":FORY=1TOLEN(R$):T$=T$+"0":NEXT
90 PRINT L$ " R$/" "T$ " IN LOWEST TERMS IS:
"
100 R=VAL(R$):T=VAL(T$)
110 IFR/2=INT(R/2)ANDT/2=INT(T/2) THENR=R/2
:T=T/2:GOTO110
120 IFR/5=INT(R/5)ANDT/5=INT(T/5) THENR=R/5
:T=T/5:GOTO120
130 IFT/R=INT(T/R) THENT=T/R:R=R/R
140 R$=STR$(R):T$=STR$(T):R$=RIGHT$(R$,LEN
(R$)-1):T$=RIGHT$(T$,LEN(T$)-1)
150 PRINTL$ " R$/" "T$:RUN
```

—BRYCE R. HICKERSON, CARMICHAEL, CA

\$3FE C-128 ELECTRONIC STAMP PAD

This program draws any set of one to eight sprites on a high-resolution screen. Use a joystick in port 2 to position the sprite on the screen and press the fire-button to copy it to the screen. When you're finished, press the space bar to select another sprite, or select sprite 0 to exit the program. When prompted for the template name, enter the name of a binary file containing the desired sprite shapes.

```
10 REM STAMPER 2/15-MATTHEW THIE
20 PRINT "{SHIFT CLR}":GRAPHIC1,1:GRAPHIC0:D
IRECTORY
30 INPUT "{CRSR DN}TEMPLATE NAME";TN$:BLOA
D(TN$)
40 PRINT "{SHIFT CLR}":E=40:FORQ=1TO8:SPRI
TEQ,1,7,1,0,0,0:MOVSPR Q, E, 50:E=E+32
:NEXT
50 PRINT "{3 CRSR DNs}{3 SPACES}1{3 SPACES}
2{3 SPACES}3{3 SPACES}4{3 SPACES}5{3 SP
ACES}6{3 SPACES}7{3 SPACES}8"
60 INPUT "{2 CRSR DNs}SPRITE NUMBER (1-8) 0
TO QUIT";SN:IFSN<0ORSN>8 THEN60
70 IF SN=0 THENGRAPHIC0:FORU=1TO8:SPRITEU,0
:NEXT:END
80 GRAPHIC1:SPRSV SN,B$
90 IFJOY(2)=1ANDTY>0 THENTY=TY-10
100 IFJOY(2)=7ANDTX>0 THENTX=TX-10
110 IFJOY(2)=5ANDTY<190 THENTY=TY+10
120 IFJOY(2)=3ANDTX<310 THENTX=TX+10
```

Continued on p. 91.

MAGIC

From p. 14.

```
130 IFJOY(2)=128 THEN GSHAPE B$,TX,TY
140 GETA$:IFA$=CHR$(32) THEN GRAPHIC0:GOTO60
150 MOVSPR SN,TX+24,TY+50:GOTO90
—MATTHEW THIE, INDIANAPOLIS, IN
```

\$3FF PERMANENT SCREEN MAPPER

I'd like to share an improvement I made to the Screen Mapper trick (\$3A8) in the February 1987 Magic. I glue a screen map produced by the Screen Mapper program to a stiff sheet of cardboard and cover it with a clear plastic cover. I use a grease pencil for drawing, and wipe off the plastic with a damp cloth when I'm finished.

—DALE PIZZO, ROXBOROUGH, PA

\$400 C-64 TURBO-CURSOR

These Poke commands will make the cursor move much faster around the screen, which is helpful in programs requiring frequent cursor use. Just enter this line:

```
POKE 650,128:POKE 56325,10
```

Poking location 650 with 128 enables all the keys to repeat. You can change the cursor's speed by poking different values into location 56325 (lower numbers give faster speeds). (Can any reader create a program that enables the cursor to move diagonally in all directions?)

—M. PELLEGRINO, SPENCER, MA

\$401 C-64 FADE-IN/FADE-OUT TEXT

I use the technique of "fading" in my screen titles to give my presentations a professional look. The subroutine I use (lines 1000-1080) shows how to employ the technique. I put my title or message in variable A\$, the location numbers of the screen lines I want my message to appear on in variable A, and then call up the subroutine. If you want to produce a fade-out effect, just add REM in front of DATA in line 1060. (See if you can figure out why the fade-out effect works.)

```
10 REM MAGIC FADING BY DON JONES
20 PRINT "{SHFT CLR}":POKE53281,0
30 A$="{17 SPACES}FADING":A=2:GOSUB1000
40 A$="{19 SPACES}IS":A=3:GOSUB1000
50 A$="{17 SPACES}MAGIC!":A=4:GOSUB1000
60 A$="{14 SPACES}BY DON JONES":A=6:GOSUB1000
70 PRINT "{CTRL 2}":END
1000 REM *FADE-IN ROUTINE*
1010 FOR L=1 TO 5
1020 PRINT "{HOME}{CRSR UP}";:FORPD=1 TO A:PRINT "{CRSR DN}";:NEXT PD
1030 READ C,D:POKE646,C:PRINT A$;
1040 FORW=0 TO D:NEXT
1050 NEXT L:PRINT:RESTORE:RETURN
1060 DATA 0,15,11,15,12,15,15,1,300
1070 REM FADE OUT DATA
1080 DATA 1,15,15,15,12,15,11,15,0,300
```

—DON JONES, VIRGINIA BEACH, VA

\$402 C-64 TWINKLE, TWINKLE, LITTLE STARS

The short routine below fills the screen with twinkling stars. I first designed it as a backdrop for a space game and later

found it useful as a visual distraction for users during a program's short waiting periods. (Can anyone put shooting stars in this program?)

```
10 REM TWINKLING STARS-MARCE BALAGUER
20 PRINT "{SHFT CLR}":DEF FNS(A)=INT(RND(0)*1000)
30 S=1024:D=54272:C=S+D
40 FORX=1 TO 50:F=FNS(X)
50 FORY=1 TO 2:FORR=1 TO 4:READA,B
60 POKES+F,A:POKEC+F,B
70 NEXT:RESTORE:NEXT:NEXT
80 DATA 86,1,91,5,42,7,46,1
```

—MARCO BALAGUER, BROOKLYN, NY

\$403 BACH IS BACK

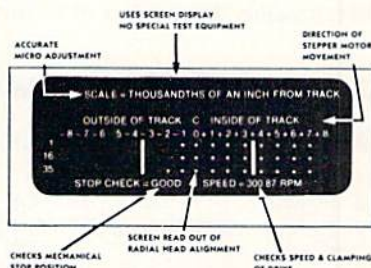
This program plays a short song written by Johann Sebastian Bach. Just type in the program, run it and enjoy.

```
10 REM HARPSICHORD PLAYER-JESSE BROWN
20 TEMPO 17:FILTER 1500,1,0,0,15
30 A$="V104T6X1HA V203T5X1QDQAQD V104IG#IF
V203QA V104IEIDM V104HA V203QDQAQD V10
4IG#IF V203QA V104IEIDM V203WD V104#IFI
GQA#QFM"
40 AA$="V203HA V104QE V203HD V104#QFQDM"
50 AB$="V203HA V104QEQAHD V203HDM" ▶
```

"I Saved Time & Money with Physical Exam"

1541 Physical Exam Sample Screen

I use a data base to keep records for our club. Last week I experienced read errors. Luckily I have a 1541 Physical Exam program. The alignment test confirmed what I had suspected, my drive was out of alignment. I am happy to report that I aligned my drive MYSELF. I avoided the wait for repair and paid a fraction of the cost.



Package includes: • True digital alignment disk with offset tracks. • Mechanical Stop Test • Speed Test • Illustrated manual with instructions for performing alignment, adjusting speed and stop position. • Hard copy mode to print test results for future reference.

\$39.95 + S & H per program Please specify drive 1541, 1571, 8050, 8250, 4040, SFD 1001

Order Toll Free 1-800-762-5645 10-6 MON-SAT

800-762-5645



Cardinal Software
14840 Build America Dr.
Woodbridge, VA 22191
Info: (703) 491-6494

MAGIC

```
60 C$="V203WA V104IE#IFQIE#IFQGM V203WD V
104#QFQAHAM V203WA V104IE#IFQIE#IFQGM
V203WD V104#QFQDHDH"
70 PLAY A$:PLAY AA$:PLAY A$:PLAY AB$:PLAY
C$:PLAY A$:TEMPO 15:PLAY AB$
```

—JESSE B. BROWN, EUNICE, LA ■

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts

or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick accepted for publication in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for the C-128 only are not eligible for the Trick of the Month.

If you'd like a copy of RUN's latest edition of the Magic Trick Writer's Guide, enclose a self-addressed, stamped business envelope with your request, and you'll receive a copy in two to three weeks.

RUN it right: C-128

MEGA-MAGIC

Spice up your reports and impress your colleagues with professional-looking pie charts.

ULTRA HI-RES PIE CHARTS

I've added a pie-chart maker routine to RUN's Ultra Hi-Res graphics program that appeared in the February and May 1986 issues. Listing 1, Ultra Hi-Res Pie Charts, works with version 1.1 of Ultra Hi-Res, which includes the @Fill and @HCOPY commands.

To create a pie chart, boot up Ultra Hi-Res V1.1 and load and run the pie chart program. You'll be asked to give your chart a name, the number of sectors you want in the chart,

the area of each sector as a percent of the entire circle and a short description of each sector to print in the legend area below the chart. The routine won't fill a sector with a pattern if it occupies an area less than 1.5 percent of the chart, so if you have more than one such sector, you might want to group them into an "other" category. ☐

—CAMERON GOODAIR, KOOLAN ISLAND, W. AUSTRALIA

Listing 1. Ultra Hi-Res Pie Charts program.

```
10 REM ULTRA HIRES PIE CHARTS-CAMERON GOOD
AIR:REM*10
20 POKE47,0:POKE48,68:CLR:REM*194
30 BANK1:PRINTCHR$(27)"E":PRINT"{SHFT CLR}
":REM*48
40 TRAP400:CM$="{23 CRSR DNs}":@TEXT
:REM*196
50 FAST:PRINTCHR$(27)"U":PRINT"{CRSR DN}{3
CTRL Is}{CRSR RT}NAME OF PIE CHART"
:REM*230
60 INPUT"{HOME}{2 CRSR DNs}{5 CTRL Is}{2 C
RSR RTs}":N$:REM*58
70 PRINT"{SHFT CLR}"CM$"{3 CTRL Is}MAXIMUM
OF 22 SECTORS PLEASE":REM*130
80 INPUT"{HOME}{2 CRSR DNs}{3 CTRL Is} HOW
MANY SECTORS":N:REM*238
90 IFN>22THENPRINTCHR$(15)"{HOME}"CM$"{3 C
TRL Is}MAXIMUM OF 22 SECTORS PLEASE"CHR
$(143):SLEEP5:GOTO70:REM*66
100 DIMA(N),C$(N),W$(N),H(N),T(N):Q=360:R=
60:C=2.4:YD=160:RN=57.296:REM*58
110 PRINT"{SHFT CLR}":H=INT(80/N):V=H*4:C
G=LEN(N$):CG=CG*8:CN$="{CRSR DN}":CO$=
"":REM*126
120 FORI=1TON:PRINT"{3 CTRL Is}PERCENTAGE
OF SECTOR" I:NEXTI:REM*18
130 PRINT"{HOME}"CM$"{3 CTRL Is}PERCENTAGE
SO FAR":REM*98
140 G=0:FORI=1TON:PRINT"{HOME}"CO$;:INPUT"
{6 CTRL Is}":W$(I):A(I)=VAL(W$(I))
:REM*128
150 G=G+A(I):PRINT"{HOME}"CM$"{5 CTRL Is}{
2 CRSR RTs}"G"{CRSR LF}{5 SPACES}":CO
$=CO$+CN$:NEXTI:REM*80
160 IFG<100THENPRINT"{HOME}"CM$CHR$(15)"{
3 CTRL Is}THE TOTAL MUST = 100%{4 SPAC
Es}"CHR$(143):SLEEP5:GOTO110:REM*182
170 PRINT"{SHFT CLR}{2 CTRL Is}{CRSR DN}A
SHORT DISCRIPTION FOR SECTOR":REM*244
180 PRINT"{HOME}"CM$"{3 CTRL Is}NO MORE TH
AN"(H-1)"CHARACTERS":PRINT"{HOME}":FOR
I=1TON:REM*84
```


RUN

THE COMMODORE 64/128 USER'S GUIDE

August 1987

A CWC/I Publication

U.S.A. \$2.95

CANADA \$3.95

U.K. £2.00

WRITING
WAS NEVER
SO EASY!

Program of the Month

► Rearrange db Files with DFClone

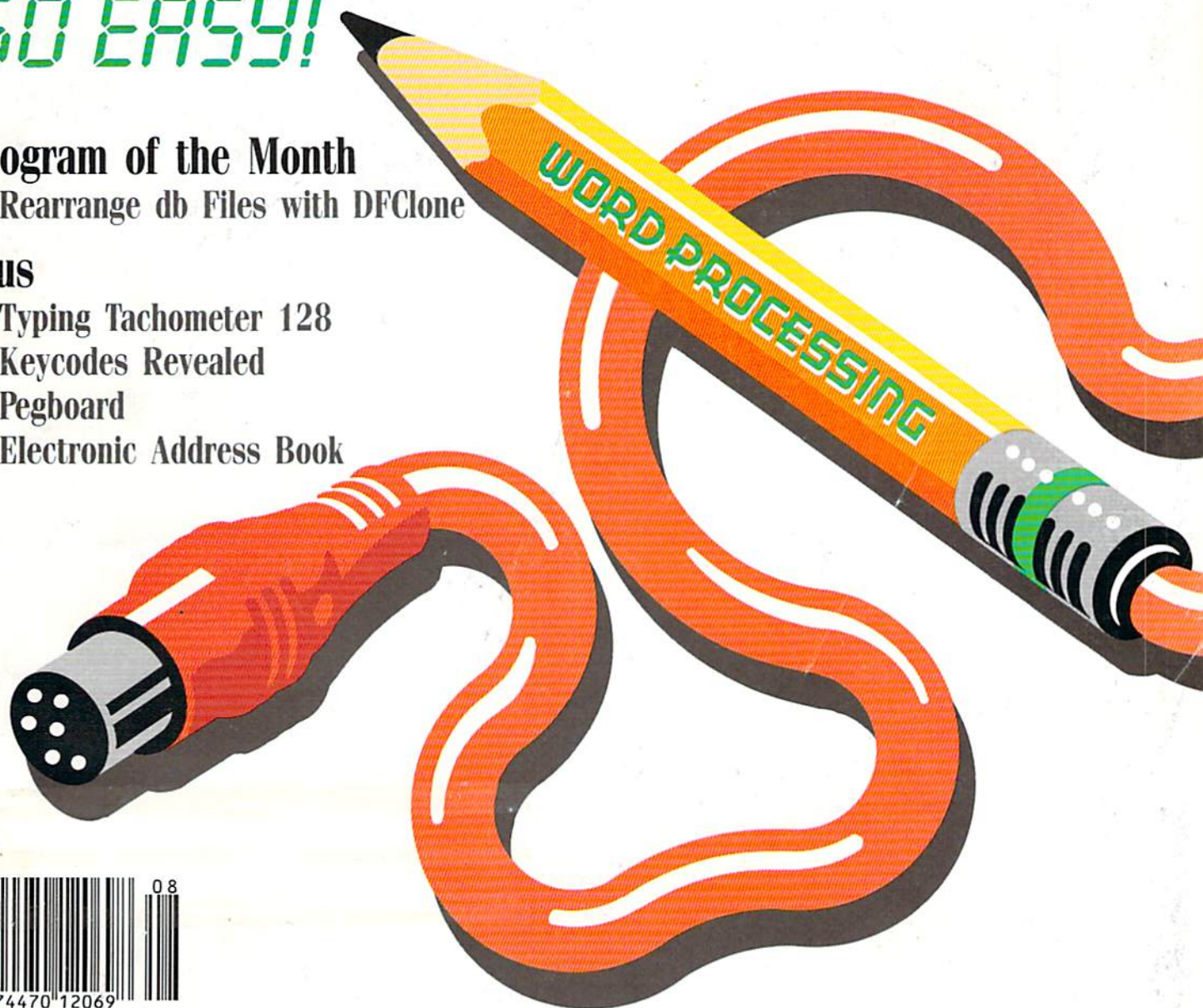
Plus

► Typing Tachometer 128

► Keycodes Revealed

► Pegboard

► Electronic Address Book



MAGIC

Print out enlarged versions of your sprites; print a border around your documents; relocate 64 Perfect Typist's checksums to the home position; and more.

Compiled by JIM BORDEN

\$404 C-128 ENGINEERING DISASTER

Run this program to see a picture of an object that cannot exist in three dimensions. It's a classic illustration of engineering gone wild!

```
Ø REM IMPOSSIBLE BLOCK-THOMAS SMITH
1Ø COLOR1,7:COLORØ,2:GRAPHIC1,1:CIRCLE,58,
  158,11,9
2Ø CIRCLE,111,158,11,9: CIRCLE,162,158,11,
  9
3Ø DRAW,49,153TO18Ø,6ØTO273,6ØTO151,154
4Ø DRAW,174,16ØTO273,8ØTO273,6Ø
5Ø DRAW,7Ø,16ØTO184,75TO234,75TO123,16Ø
6Ø DRAW,1ØØ,153TO184,9ØTO184,75:DRAW,184,9
  ØTO215,9Ø
```

—THOMAS B. SMITH, GALLIPOLIS, OH

\$405 C-128 SPRITE PRINTER

If you need an enlarged version of your sprite images on hard copy, just load your sprites and run this program.

```
Ø REM SPRITE PRINTER-M.G.HAGELSIEB
1Ø FORI=2816TO2933:READA:POKEI,A:C=C+A:NEX
  T:IFC<>14ØØØTHENPRINT"CHECK DATA!":END
2Ø INPUT"(SHIFT CLR)SPRITE #";S:S=352Ø+S*64
  :GOSUB6Ø:POKE2827,D:POKE2831,B:S=S+63:G
  OSUB6Ø
3Ø INPUT"SCREEN OR PRINTER (S/P)";P$:IFP$=
  "P"THENOPEN4,4:CMD4
4Ø POKE2914,D:POKE2923,B:SYS2816
5Ø IF P$="P"THEN PRINT#4:CLOSE4:END: ELSE
  END
6Ø B=INT(S/256):D=S-256*B:RETURN
7Ø DATA 169,Ø,141,116,11,169,7,141,117,11,
```

```
169,128,133,252,169,14,133,253
8Ø DATA 172,116,11,177,252,141,118,11,169,
  7,141,117,11,173,118,11,24,1Ø,141
9Ø DATA 118,11,176,8,169,32,32,21Ø,255,76,
  54,11,169,35,32,21Ø,255,2Ø6,117
1ØØ DATA 11,174,117,11,224,255,2Ø8,223,238
  ,116,11,173,116,11,2Ø1,3,2Ø8,23
11Ø DATA 169,Ø,141,116,11,24,169,3,1Ø1,252
  ,133,252,165,253,1Ø5,Ø,133,253,169
12Ø DATA 13,32,21Ø,255,169,191,197,252,24Ø
  ,3,76,18,11,169,14,197,253,24Ø,3
13Ø DATA 76,18,11,96,Ø,255
```

—MARCOS GLEZ. HAGELSIEB,
GUADALAJARA, JALISCO, MEXICO

\$407 EASY DISK NOTES

If you'd like to send a note to a friend who doesn't know how to use your notepad program, just write your note, with line numbers, as if it were a listing for a Basic program. Save your note as the first program on your disk with a filename such as Load & List.

When your friend looks at the directory, he'll most likely load and list that program. But, if he loads and runs the first program, he'll get a Syntax error. In that case, your friend will list the program to find what caused the error, and your note will pop onto the screen.

—ED ADAMS, GRAND FORKS, ND

\$408 DISK FILE COUNTER

Usually a disk fills to capacity long before its directory does, but if you've saved many short files, you may not know how full the directory actually is. If you use my program to read ▶

TRICK OF THE MONTH

\$406 64 PERFECT TYPIST IMPROVEMENT

One part of RUN's 64 Perfect Typist program that irritates me is the screen location of the checksum, which prints below the line I've just entered. This poses a problem when I want to check old listings or use an automatic line numbering program. So, I wrote the changes below to relocate the checksum to the home position. Make these line changes to the program.

Line 30: change ML + 154 to ML + 183

Line 40: change 16251 to 20566

Line 80: change ML + 141 to ML + 161

Also enter these lines:

```
Ø REM 64 PERFECT TYPIST IN HOME POS-M.B.
  ENDERS
26Ø DATA Ø21,141,24Ø,ØØ3,166,214,2Ø2,142
262 DATA 242,ØØ3,169,ØØØ,133,212
263 DATA 169,Ø19,Ø32,21Ø,255,169
266 DATA Ø18,Ø32,21Ø,255,169,Ø42,Ø32,21Ø
27Ø DATA 255,169,ØØØ,174,24Ø,ØØ3,Ø32,2Ø5
28Ø DATA 189,162,ØØ2,189,241,ØØ3,Ø32,21Ø
29Ø DATA 255,2Ø2,Ø16,247,164,Ø11,174,242
3ØØ DATA ØØ3,134,214,169,Ø13,Ø32,21Ø,255
31Ø DATA Ø96,146,Ø32,Ø32
```

—MICHAEL B. ENDERS, FORT WAYNE, IN

MAGIC

your disk's directory and count the number of files, you'll know when to start using a fresh disk.

```
10 REM FILE COUNTER-LEO BRENNEMAN
20 PRINT "{SHIFT CLR}":OPEN1,8,15,"I0":Z$=C
  HR$(0)
30 OPEN 2,8,2,"#":S=1
40 PRINT#1,"U1:";2;8;18;S
50 GET#2,T$,S$:T$=T$+Z$:S$=S$+Z$
60 FORI=2TO226STEP32
70 PRINT#1,"B-P:";2;I
80 GET#2,A$:IFA$<>" "THENN=N+1:GOTO110
90 GET#2,A$,A$
100 FORJ=1TO16:GET#2,A$:NEXTJ
110 NEXTI
120 T=ASC(T$):S=ASC(S$):IFT>0THEN40
130 CLOSE2:CLOSE1
140 PRINT "{3 SPACES}THERE ARE"N"FILES ON T
  HIS DISK."
```

—LEO W. BRENNEMAN, ERIE, PA

\$409 C-64 DIRECT MODE DISK-ERROR READER

The next time you need to read the disk error channel with your C-64 and you don't have the DOS Wedge in memory, try this handy line in Direct mode:

```
OPEN1,8,15:POKE58,0:{about 20 spaces}INPUT#1,A$,B$,C$,D$:
  ?A$,B$,C$,D$:CLOSE1
```

The exact number of spaces isn't important, as long as you type in about 20.

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$40A C-64 GETSPEED

This short machine language program prints a sequential file to your monitor screen. It will prompt you for the filename, then print and close the file.

```
10 REM 64 GETSPEED - IVO SALMRE
20 FORA=820TOA+57:READB:POKEA,B:NEXT
30 DATA 169,005,162,241,160,003,032,189,25
  5,169
40 DATA 003,162,008,160,003,032,186,255,03
  2,192
50 DATA 255,162,003,032,198,255,032,159,25
  5,201
60 DATA 032,240,016,032,183,255,201,064,24
  0,009
70 DATA 032,207,255,032,210,255,076,078,00
  3,169
80 DATA 003,032,195,255,032,204,255,096
90 INPUT"FILENAME TO READ":A$
100 FORX=1TOLEN(A$):POKE1008+X,ASC(MID$(A$
  ,X,1)):NEXT
110 POKE821,LEN(A$):SYS820
```

—IVO SALMRE, NORWALK, CT

\$40B SAVING FILES ON Q-LINK

You can save QuantumLink's on-screen files with the F3 key by simply using an existing sequential filename to append the Q-Link file to it.

—FRED MAYES, BARTLESVILLE, OK

\$40C LETTER BOXES

This program prints a border along the edges of your posters and letters. First print the border (use 8½ × 11-inch paper), then run the paper through a second time to print your text. It should work with any 1525-compatible printer and on other printers with a few changes to the program.

```
10 REM BORDER - TOM FONTANA
20 W=80:H=107:W$=STR$(W-1)
30 W$=RIGHT$(W$,LEN(W$)-1)
40 CLOSE4:OPEN4,4,0
50 FORX=1TOW:TP$=TP$+"{COMD P}":NEXT
60 FORX=1TOW:BM$=BM$+"{COMD Y}":NEXT
70 PRINT#4,TP$CHR$(8):PRINT#4,CHR$(15);
80 FORX=1TOH:PRINT#4,CHR$(15)"{COMD J}"CHR
  $(16)W$"{COMD L}"CHR$(8):NEXT
90 PRINT#4,CHR$(15)BM$:CLOSE4
```

—TOM FONTANA, KANSAS CITY, MO

\$40D C-128 HELP-KEY CAUTION

The reverse-video highlight on the 40-column Help display can cause a problem within quotes. To see why, run this program:

```
10 B$=" BELL"
20 R$="RING"+B
30 PRINT R$
```

Now press the help key, move the cursor up to line 20 and add a \$ after the letter B. Press return and run the program again to see what happens. Use the help key to find the error, but list the line to edit it in 40-Column mode.

—JACK NORVELL, MEMPHIS, TN

\$40E USEFUL GOTO

Here's an easy way to put comments in your programs without wasting time or using extra space typing REM. Put your comments at the start of your program, beginning with line 2, and put the Goto command in line 1:

```
1 GOTO20
2 YOUR COMMENTS
3 ON LINES 2-19
```

If you use a renumber utility, you can include a Goto and the line number in your comments, along with a brief name for each subroutine. These will be renumbered, along with the program, but will not cause any problems when you run the program.

—CHANCE AGRELLA, PRESCOTT, AZ

\$40F QUICK C-128 FUNCTION KEY DISABLE

Entering a single Poke command will convert your C-128's function keys to the C-64's function key values. To perform this magic, enter the incantation POKE 828,183. It will change the vector that's used to interpret all function keys. The Get command will now return the regular values for the C-64, but the run key will give an ASCII value of 131 and the help key will give a value of 132. Enter POKE 828,173 to get back your old definitions.

—CHARLES LAVIN, CORAL GABLES, FL

Continued on p. 88.

RESOURCE CENTER

and training in computers and the use of software. Your user's group can be a valuable support vehicle for local school teachers who are interested in learning about computers. This support might consist of sharing software from the public domain, doing demonstrations for teachers and students, and recommending commercial and public domain programs of merit.

The PCG has found that three kinds of commercial programs initially attract teachers to computers: Print Shop-type programs and those that create word-search and crossword puzzles. Once teachers get interested in the applications of these programs, they quickly move on to more sophisticated software, such as word processors, database managers and programs for specific areas of study.

User's groups can play an on-going role in promoting computer use in local schools and educational computing in the home. If your group isn't active in this area yet, get it started with some ideas from the Pittsburgh Commodore Group.

The Pittsburgh Commodore Group is offering Resource Center readers its Siewiorak CBM educational disk for grades K, 1 and 5 (\$4) and its five-page list of educational software used in schools (44¢). To get them, write to PCG, PO Box 16126, Green Tree, PA 15242. You can contact Robert Agostino on QuantumLink under the name Robert A17, or by letter at 701 Reamer Drive, Carnegie, PA 15106. ■

If you're using Commodore computers for educational purposes (at home or in school)

and would like to share your experiences through the Resource Center, write me a letter detailing the equipment you're using, subject areas you teach, grade level or age of your students, software you're using and any other information you feel like including.

Also, if you'd like to donate public domain educational programs to the Resource Center for sharing with other educators or parents, please send along a disk with a brief description of the program. Send correspondence and disks to:

Margaret Morabito
Resource Center
c/o RUN Magazine
80 Elm St.
Peterborough, NH 03458

You can also leave mail in my on-line mail boxes: CompuServe (70616,714) or QuantumLink (MARGM).

MAGIC

From p. 14.

\$410 IS THIS YOUR EXIT?

When I add a menu to a program I'm working on, I include a Quit option. I also put in Print statements to remind me of lines I'll need to change, the values of variables, and so on. When I'm finished with the program, I remove any statements I used while I was debugging. By putting this option's code at the end of the listing, deleting such lines will not disturb the order of line numbers in the main program.

—BOB DAY, MONROVIA, CA

\$411 SIMPLE NO-PROMPT INPUT

Once in a while, the question mark prompt gets in the way when I'm using the Input statement. My two-liner puts an end to this pest:

```
10 PRINT "PLEASE ENTER YOUR NAME":PRINT ":";
20 OPEN1,0:INPUT#1,N$:CLOSE1:PRINT
```

The Print statement at the end of line 10 prints a prompt, but you may drop the line if you wish. The Print statement in line 20 moves the cursor to the next line when you're done with the Input statement.

—DAVE BIUNNO, JACKSON HEIGHTS, NY

\$412 NO-SCROLL KEY DISABLE

You can disable the no-scroll key on the C-128 by entering POKE 247,PEEK(247)OR64.

—DAIHUNG DO, EAST MOLINE, IL

\$413 SPELLING PRACTICE

Students of all ages will enjoy this program as they improve their typing, spelling and word-recognition skills. It should run on any Commodore computer.

A word from the word list is displayed on the screen in

turn, then wiped out, and the student types in the correct spelling. The program displays any misspelled word to give the student a second chance before advancing to the next word.

To change the word list, enter your new words in the Data statement in line 200 of the listing. Add extra Data statements to accommodate additional words. To save the listing in 128 mode, list the directory, move the cursor to the filename, enter DSAVE"@FILENAME": and press the return key. For 64 mode: SAVE"@FILENAME",8: and press return.

```
10 REM SPELLING PRACTICE-JOE CHARNETSKI
20 INPUT{SHFT CLR}DISPLAY SPEED 1-12";S
30 READW$:R=1
40 PRINT{SHFT CLR}{CRSR DN}{CRSR DN}{
CTRL 9}"W$
50 IFW$="END"GOTO150
60 X=1:FORZ=1TO1400-50*S:NEXT
70 FORZ=1TO100:GET A$:NEXT
80 T=T+1:INPUT{SHFT CLR}{2 CRSR DNs}THE W
ORD IS";A$:PRINT
90 IFA$=W$THENW$="<OKAY>":C=C+1:R=0
100 PRINTTAB(13)W$"{CRSR UP}"
110 FORZ=1TO150:NEXT:X=X+1:IFXAND1GOTO100
120 IFX<12THENPRINT{CTRL 9}";:GOTO100
130 IFRTHENR=0:GOTO40
140 GOTO30
150 PRINT{CRSR DN}RIGHT="";C
160 PRINT{CRSR DN}WRONG="T-C
170 INPUT{CRSR DN}WANT TO PRACTICE MORE (
Y/N)";K$
180 IFK$="Y"THENRUN
190 PRINT{CRSR DN}BYE..."
200 DATA ACCOMMODATE,WEIRD,SUPERSEDE,PSYCH
OLOGY
999 DATA END
```

—JOSEPH R. CHARNETSKI, DALLAS, PA

\$414 PAGE PRINTER

When printing program listings on my MPS-801 printer, I find it difficult to line up the paper so that some line of text isn't cut in half by the perforations. The short program below allows you to set a bottom margin to overcome this problem.

```
10 REM PAGE - MICHAEL MYERS
20 FOR I=53100 TO 53189: READ Q: POKE I, Q: CK=CK+Q
  : NEXT
30 IF CK<>13039 THEN PRINT "ERROR IN DATA"
40 DATA 169,157,141,38,3,169,207,141,39,3,
  169,3,133,252,32,253
50 DATA 174,32,107,169,165,207,72,198,252,2
  08,243,104,141,172,207,104
60 DATA 141,166,207,104,141,148,207,169,66
  ,133,251,32,253,174,76,164
70 DATA 166,201,13,208,31,198,251,165,251,
  201,2,208,21,138,72,162
80 DATA 3,189,192,207,32,210,255,198,251,2
  08,249,104,170,173,148,207
90 DATA 133,251,169,13,76,202,241,141,10,1
  0
```

To use the new page lister, use the following syntax:

OPEN4,4:CMD4:SYS53100,page length,bottom margin,device number,range

The Open and CMD statements are only required for output to the printer. The page length should be from two to 66 lines, and the bottom margin must be at least one line, but less than the page length. Send the listing to the screen with device number 3, or use your printer's device number for a hard

copy. The range is the same as that used after the Basic List command.

To send output to your printer, type in PRINT#4:CLOSE4 to clear the channel. You should press run-stop/restore when the listing is finished, to restore the pointers used by the Kernal CHROUT routine.

If you want to double-space your listing, use a page length of 2 and a bottom margin of 1.

—MICHAEL MYERS, BEARDSTOWN, IL ■

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for C-128 mode only are not eligible for Trick of the Month.

If you'd like a copy of the latest edition of RUN's *Magic Trick Writer's Guide*, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

**RUN it right: C-64;
printer [optional]**

MEGA-MAGIC

Now you have a search and locate feature for your C-64.

C-64 LOCATOR

One feature possessed by screen editors on many computers more powerful than the C-64 is a locator function for finding all occurrences of a specific string in a listing. String Locator (Listing 1) fills this gap by locating all the lines containing a specified string of characters and printing their numbers to the screen or printer.

After you've typed in and saved Listing 1, run the program to activate the Locate function. You can then type in or load a program and use this function to help you debug or analyze a program.

Each Basic command is stored in memory as a single character. If you could peek inside memory for the word PRINT, for example, you wouldn't find it, because the editor automatically tokenizes the word to one character. However, Basic doesn't tokenize any word enclosed in quotation marks.

It's obvious, then, that the locate function must be able to

distinguish between tokenized and untokenized strings. If, for example, you type in LOC GOTO, the program locates all tokenized occurrences of GOTO, whereas typing in LOC !GOTO finds all instances of GOTO within quotes.

Your computer then asks if you want the line numbers where a string's been found to be sent to the screen (press S) or the printer (press P).

The function occupies memory locations 49152-49797 (\$C000-\$C285). So, if you're using a machine language routine with your Basic program, make sure that it doesn't occupy this area. If it does, deactivate the Locate function before you run your program by entering SYS 49155 and pressing the return key.

The more you use this program, the more you'll wonder how you ever got along without it! ☐

—ALTON C. WILLIAMS, HUNTSVILLE, AL ►

The Scene at CES

RUN

THE COMMODORE 64/128 USER'S GUIDE

September 1987

A CWC/I Publication

U.S.A. \$2.95

CANADA \$3.95

U.K. £2.00

Redefine Your
64 Function Keys

Telecommunications

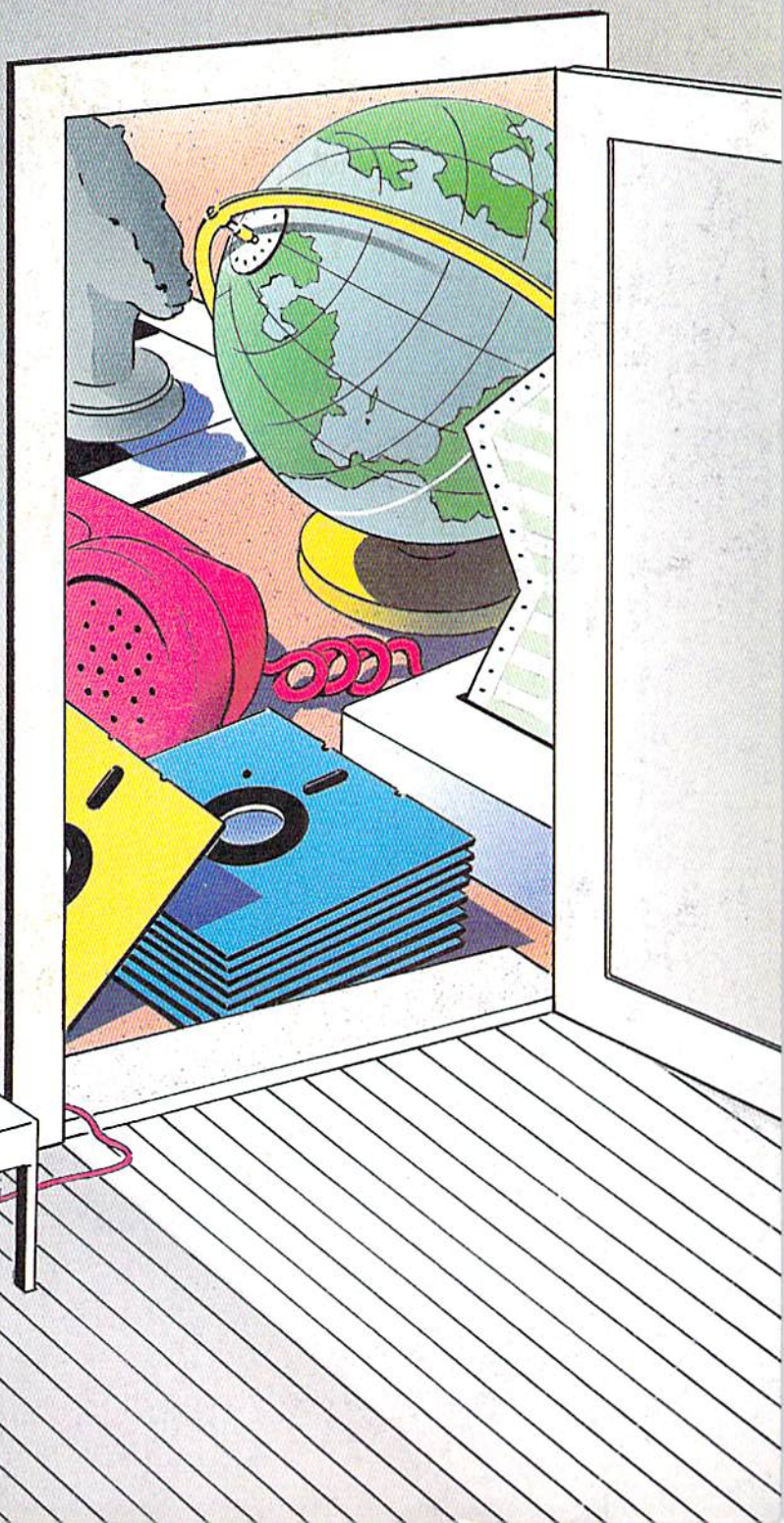
- ▷ Chat with Users
- ▷ Access Information
- ▷ Download Software
- ▷ Play Games
- ▷ And More!

Program of the Month

- ▷ RUN Notepad 128

Plus

- ▷ Phaser Phire
- ▷ Screen Genie
- ▷ Cursor Commotion



MAGIC

Discover several undocumented characters in GEOS; use a handy C-64 sprite editor; read the joystick positions on your C-64; and more.

Compiled by JIM BORDEN

\$415 SAVE TIME BY SAVING TO SIDE B FIRST

Using a disk that's been formatted in 1571 mode theoretically saves time by eliminating the need for disk swaps when you save and access data files. However, in reality the time advantage is lost, because when the drive program is saving to side B, it has to check the block allocation map (BAM) on side A after writing every block.

To overcome this problem, format a new disk and then run my BAM Filler program, which allocates all blocks on side A (except the directory). Then save the main program and support files to side B. Finally, use the Collect command to free side A once again.

Wait until after Collect finishes executing to put an autoboot program on the disk. Otherwise, it will free the autoboot block.

```
10 REM SIDE A BAM FILLER-IAN PEARSE
20 NU$=CHR$(0)
30 OPEN15,8,15,"I0":OPEN8,8,8,"#":PRINT#15
  ,"UA:8,0,18,0"
40 PRINT#15,"B-P:8,4":FORX=4TO71:PRINT#8,N
  U$;:NEXT
50 PRINT#15,"B-P:8,76":FORX=76TO143:PRINT#
  8,NU$;:NEXT
```

```
60 PRINT#15,"UB:8,0,18,0":PRINT#15,"I0":CL
  OSE8:CLOSE15
```

—IAN W. PEARSE, EARLVILLE, QLD., AUSTRALIA

\$416 SCRATCHING WITH WILD CARDS

If you intend to scratch several files beginning with the same few characters by using a wild-card character (* or ?), it's easy to see which files will be scratched by using the same character with the DOS Wedge or the Directory command. For example, if you're thinking of scratching all files whose names start with FILE, use @\$:FILE* with the Wedge, or type in DIRECTORY "FILE*" on the C-128. Then you can go ahead and use the wild card, or individually scratch only those files you really want to eliminate.

—IAN W. PEARSE, EARLVILLE, QLD., AUSTRALIA

\$417 1541 VS 1571 SECTOR INTERLEAVE

I write C-64 programs on both the C-64 and C-128, with 1541 and 1571 disk drives. When I use fast-loaders, C-64 programs that I've saved with a 1571 drive require nearly twice as much time to load as those saved with a 1541 drive.

Investigation showed that the blocks in the 1541-saved files ▶

TRICK OF THE MONTH

\$418 C-64 RIVER RUN

One day, as you speed downstream in your new powerboat, you suddenly hear a roaring ahead. Beware! There are rapids ahead!

River RUN works on the C-64 or in 40-Column mode on the C-128. The farther downstream you travel, the more rocks you'll encounter and the higher your score will be. Use the comma key to make the boat turn left and the period key to turn right. When you crash, you'll be asked if you want to play again.

```
1 REM RIVER RUN - ROBIN BLAINE
10 AS="{COMD 7}{COMD *}{CTRL 9}{2 SHFT Ms}
  {6 SPACES}{2 SHFT Ms}{COMD *}{CTRL 0}":
  BS="{COMD 7}{CTRL 9}{SHFT LB.}{2 SHFT N
  s}{6 SPACES}{2 SHFT Ns}{CTRL 0}{SHFT LB
  .}":CS="{COMD 7}{CTRL 9}{2 COMD Ms}{7 S
  PACES}{COMD H}{COMD G}{CTRL 0}":SC=1184
20 PRINT"{SHFT CLR}{COMD 7}":POKE53280,13
  :POKE53281,13:POKE53265,23:POKE650,128
30 PS="{HOME}":FORA=1TO24:PS=PS+"{CRSR DN}
  ":NEXT:P=14:B=20:Q=RND(-TI)
40 FORX=1TO25:PRINTSPC(P+1);C$:NEXT
```

```
50 A=INT(RND(1)*3)+1:IFP<5THENA=1
60 IFP>22THENA=2
70 T=INT(RND(1)*40):POKE1984+T,30:POKE5625
  6+T,5:GETK$:POKESC+B,174
80 ONAGOTO90,100,110
90 P=P+1:PRINTP$;SPC(P);A$:Q=0:GOTO120
100 PRINTP$;SPC(P);B$:P=P-1:Q=0:GOTO120
110 PRINTP$;SPC(P+1);C$:Q=1
120 S=S+1:PRINT"(HOME)";S:IFK$=","THENB=B-
  1
130 IFK$="."THENB=B+1
140 IFPEEK(SC+B)<>160THEN180
150 POKESC+B,150
160 R=INT(RND(1)*100):IFR<P%THENT=INT(RND(
  1)*(5+2*Q)):R=T+P+4-Q:POKE1944+R,209
170 P%=P%+5*ABS(S/20)=INT(S/20):GOTO50
180 POKESC+B,170:FORX=1TO1000:NEXT:PRINT"(
  HOME)";S
190 FORX=1TO10:GETA$:NEXT:INPUT"(HOME){CRS
  R DN}PLAY AGAIN (Y/N){2 SPACES}Y{3 CRS
  R LFs)";A$:PRINT"(SHFT CLR)"
200 IFLEFT$(A$,1)="Y"THEN RUN
```

—ROBIN BLAINE, LOUISVILLE, MS

were separated by ten blocks (interleave = 10), while blocks in the 1571-saved files were separated by six blocks (interleave = 6). Typically, a 1541 fast-loader program can transfer two blocks of a program to the computer with each revolution of the disk. When programs are saved with a 1571, however, the blocks are too close, and the fast loaders can read only one block per revolution.

In 1571 mode, the drive is fast enough to pick up three blocks on each spin. Unfortunately, the default interleave is 6 in both 1571 and 1541 modes. Fortunately, you can change the interleave default with this program line:

```
10 REM 64/1571 INTERLEAVE-RAY ROBERTS
20 OPEN 15,8,15:PRINT#15,"M-W"CHR$(105)CHR
  $(0)CHR$(1)CHR$(10):CLOSE15
```

The final CHR\$ value is the interleave value, in this case, 10. If you use this line before saving programs on a 1571, your C-64 fast-loaders will work at full speed. However, using this line for 128 programs will make them load more slowly in 1571 mode.

—RAY ROBERTS, GAINESVILLE, FL

\$419 1541 DOS WEDGE COMMAND SUMMARY

Many new C-64 users may not be aware of the full usefulness of the DOS Wedge utility that comes on the demo disk supplied with the disk drive. Here's a summary of the commands available with this very handy utility. Refer to the drive manual for a full explanation of the DOS commands. Note, however, that not all the DOS Wedge commands listed here are covered in the older manuals.

- @—Returns the current disk status.
- @\$—Lists the directory to the screen without disturbing the program in memory. (Note: Tap the space bar to stop and start the directory.)
- @I0—Initializes the disk drive.
- @UJ—Software reset for the DOS.
- @V0—Validates disk.
- @#N (where N is the drive number, 8 to 15)—If you have two or more drives, this command lets you switch the DOS Wedge commands back and forth between drives. For instance, @#9 will send the commands to drive 9.
- @N0:DISK NAME,ID—Formats a disk. (Warning: This command destroys all data on a disk.)
- @C0:NEW FILENAME = 0:OLD FILENAME—Makes a copy of an old file on the same disk under a new filename.
- @R0:NEW NAME = 0:OLD NAME—Renames a file on the disk.
- @S0:FILENAME—Scratches a file from the disk.
- /FILENAME—Loads a Basic program.
- !FILENAME—Loads and runs a Basic program.
- %FILENAME—Loads a program back into memory at the exact place it was saved from. (For binary files such as DOS 5.1.) Note: The latter three commands can be used in a directory listing by typing the first character in the first column and pressing return; the Wedge will see only the filename within quotes and ignore any other characters on the line.
- FILENAME—Saves a program to disk.
- @Q—Disables the DOS Wedge program.

Note that > can be used instead of @. Also, to use DOS Wedge commands in a program requires a different syntax. First type the @ and then include the command within quotes. For example, 10 @"I0" will initialize the drive (assuming the Wedge is active).

—DON GRIFFEY, HOPKINSVILLE, KY

\$41A C-64 WEDGE HANDLER

If you're like me, you'll want a copy of the DOS Wedge on each of your disks. I use the following program to load and boot the Wedge's DOS 5.1 program. Then, whenever I want to copy the machine language program onto other disks, that option is always available, and I can even save my wedge handler at the same time.

```
10 PRINT"{SHFT CLR}C-64 WEDGE HANDLER - JO
  E CHARNETSKI"
20 IF BY=0 THEN BY=52224:F$="DOS 5.1":LOAD
  F$,8,1
30 INPUT"{CRSR DN}(B)OOT OR (C)OPY";A$:IFA
  $="B"THEN PRINT"{SHFT CLR}":SYS BY:NEW
40 ON-(A$<>"C")GOTO30:INPUT"{CRSR DN}COPY
  THIS PROGRAM TOO (Y/N)";B$
50 PRINT"{CRSR DN}INSERT TARGET DISK - HIT
  ANY KEY"
60 GET C$:IF C$="" GOTO 60
70 OPEN15,8,15,"I0":OPEN7,8,9,F$+"P,W"
80 INPUT#15,D,E$:IF D THEN PRINTES$:GOTO110
90 PRINT#7,CHR$(0);CHR$(204);
100 FOR I=0TO857:PRINT#7,CHR$(PEEK(I+BY));
  :NEXT
110 CLOSE7:IF B$="Y"THEN SAVE "WEDGE HANDL
  ER",8:INPUT#15,D,E$:PRINT ES
120 IF D=0 THEN PRINT"DONE."
130 CLOSE15:GOTO30
```

—JOSEPH R. CHARNETSKI, DALLAS, PA

\$41B C-128 ESCAPE ESC

I've found an undocumented escape function in the C-128's screen editor. Just press the escape key twice. The double escape disables Reverse, Underline, Insert (from the insert-delete key) and Quote modes. The result is the same as pressing ESC O, but it's easier to type.

—CHARLES LAVIN, CORAL GABLES, FL

\$41C C-64 JOY FUNCTION

My joystick interpreter makes it easy to read the joystick positions on the C-64. This interrupt-driven program resides in the cassette buffer, and, when activated by SYS 828, it runs in the background until you press run-stop/restore.

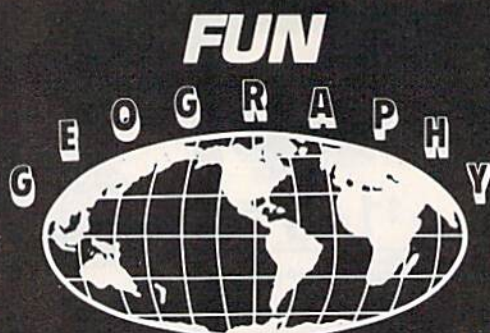
You can find the positions of the joysticks by peeking memory location 252 for port 2 or 253 for port 1. Just like the Joy function in Basic 7.0, the locations of the joysticks are as follows:

```
8 1 2
7 0 3
6 5 4
```

Add 16 if the fire-button is pressed. If you peek location 252 and get a value of 20, that means joystick 2 is pushed in the southeast direction and the fire-button is pressed.

```
10 REM C-64 JOYSTICK TRANSLATOR PROGRAM -
  ROGER MOORE
20 FORX=828TO885:READA:POKEX,A:C=C+A:NEXT
30 IFC<>5208 THENPRINT"DATA ERROR!"
40 DATA 120,169,73,141,20,3,169,3,141,21,3
```

Continued on p. 86.



WORLD

EDITION

\$39.95

- An ENTERTAINING and EDUCATIONAL package for the entire family
- Browse through the world and learn a wealth of interesting facts and figures at your finger tips
- Extensive use of color graphics for superb visual displays
- Nearly 1 megabyte of textual data contained on 5 disks
- Requires Commodore 128, 1 disk drive, joy stick (color monitor recommended)

Send cash, check or money order to:

**California Computing Specialists
Dept. A**

5102 Neptune, Newport Beach, CA 92663

714-548-4144

Calif. residents add 6% sales tax

Circle 117 on Reader Service card.

**1541
COMPATIBLE
DISK DRIVE
\$159**

**APPLE II
COMPATIBLE DRIVES
JOYSTICKS....MODEMS**

TO ORDER CALL TOLL FREE

1-800-283-6274

We guarantee your satisfaction!



**NORTH AMERICAN
PRODUCTS
INTERNATIONAL**

5892 MAIN STREET / SPRINGFIELD, OR 97478 / 503-741-1222

MAGIC

From p. 14.

,88,96,160,2,185,255,219,73,255,41
50 DATA 31,170,41,16,153,251,0,138,41,15,1
70,189,107,3,25,251,0,153,251,0,136
60 DATA 208,227,76,49,234,0,1,5,0,7,8,6,0,
3,2,4

—ROGER MOORE, OAKRIDGE, TN

\$41D IMPROVED PLUS/4 PERFECT TYPIST

I was pleased to find a modification of the 128 Perfect Typist program to work with the Plus/4 (trick \$3CD, April 1987). However, I tend to forget the Pokes, so I added several more lines to make the computer do them for me, reload the program and run it all automatically. Here are the extra lines:

```
5 IFPEEK(44)=22ANDPEEK(5632)=0GOTO10
6 PRINT" {SHFT CLR}POKE44,22:POKE5632,0:NEW
  "
7 PRINT" {2 CRSR DNs}DLOAD"+CHR$(34)+" "+4PER
  FECT TYPIST"
8 PRINT" {4 CRSR DNs}RUN":POKE239,4
9 POKE1319,19:FORX=1320TO1322:POKEX,13:NEX
  T:END
```

The following are necessary substitutions for the data in lines 140 and 150 of 128 Perfect Typist:

```
140 DATA 19,24,101,20,24,101,21,141,252,19
  ,169,42,32,241,20,32,188,20,160
150 DATA 2,185,185,20,32,241,20,136,16,247
  ,165,115,208,9,165,116,208,5,169
```

—EUGENE I. ROTHMAN, BROOKLYN, NY

\$41E EXTRA GEOS CHARACTERS

Although they're not mentioned in the manual, several additional characters are available in GEOS by using the Commodore key with the following keys:

[makes a { (curly left bracket)
] makes a } (curly right bracket)
/ makes a \ (backslash)
@ makes an ` (accent mark)
* makes a ~ (tilde mark)
! makes a | (vertical bar)

—BARRY SOLOMON, MONTGOMERY, PA

\$41F GEOS FONT STYLES

If you're having trouble changing GEOS font styles (such as italic to bold), try this trick. Activate the style menu, highlight the Plain Text style and click once. Then repeat the process, but this time highlight the desired style. When you start typing, the new style will be displayed. If you change from italic to bold without plain text between, you'll get bold italic.

—WILLIAM LEES, SAN FRANCISCO, CA

\$420 NEW FIRST FILE

After you have a number of files on a disk, you might find that you want to place the file you use the most first in the directory. When it's in that position, you can load the file after turning on your computer by entering LOAD"*",8—

MAGIC

without having to type the filename. The program below will let you swap the first file in a directory with any other file on the disk. Try this program on a back-up disk first, to be sure it's typed in correctly. Otherwise, you could lose everything on the disk.

```
10 REM 1ST FILE-ANTHONY AGUIRRE
20 INPUT" NAME OF CURRENT FIRST PROGRAM ";
  F$
30 INPUT"NAME OF PROGRAM TO BE FIRST";P$
40 PRINT"VALIDATING DISK":OPEN15,8,15,"V0"
50 PRINT"SWAPPING FILES":F1$=F$+"." :P1$=P$
  "+"
60 PRINT#15,"C0:"+F1$+"="0:"+F$:PRINT#15,"S
  0:"+F$
70 PRINT#15,"C0:"+P1$+"="0:"+P$:PRINT#15,"S
  0:"+P$
80 PRINT#15,"R0:"+P$+"="0:"+P1$:PRINT#15,"R
  0:"+F$+"="0:"+F1$
90 CLOSE15:PRINT"(2 CRSR DNs)ALL DONE!"
```

—ANTHONY AGUIRRE, HAVERTOWN, PA

\$421 C-64 INSTR FUNCTION

The C-128 has a handy INSTR function for finding the position of one string within another. The following subroutine will give the same results on the C-64:

```
10 REM 64 INSTR-DON JARVIS
10000 XA=LEN(A$):XB=LEN(B$):XX=0:SP=1:REM S
  TART POS OPTIONAL
1010 FORXE=SP TO XA-XB+1:IF MID$(A$,XE,XB)
  =B$ THEN XX=XE:XE=XA
1020 NEXT:RETURN
```

Variables A\$ and B\$ are the long string and the substring you want to find, respectively. The position of the first letter match is returned in variable XX. A value of 0 means that no match was found. Be sure not to use the variables in the subroutine—XA, XB, XE, XX and SP—in other parts of your program. You might get strange results.

—DON JARVIS, MIAMI, FL

\$422 PRIME NUMBERS

This short and relatively fast program determines if a number is prime. Numbers up to 10000 will take only a few seconds; larger numbers will take up to a minute (9999973 takes about 40 seconds on a C-64). The program should work on any Commodore computer.

```
10 REM PRIME BRIAN DUCHESNEAU
20 PRINT"{SHFT CLR}"
30 INPUT"{CRSR DN}";X:Z=SQR(X):Y=1:IFX=0TH
  EN END
40 IF X/2=INT(X/2)THENPRINT"{CRSR DN}COMPO
  SITE":GOTO30
50 FORY=3TOZSTEP2:D=X/Y:I=INT(D):S=D-I
60 IF S>0THEN NEXT
70 IF S=0THENPRINT"{CRSR DN} COMPOSITE":GO
  TO30
80 PRINT"{CRSR DN} PRIME":GOTO30
```

—BRIAN DUCHESNEAU, ST. ALBANS, VT

PROF JONES
SUMMER/FALL 1987

ORDER LINE
(208) 342-6939

THOROUGHBRED
GREYHOUND
HARNESS
LOTTERY/LOTTO
FOOTBALL
BASKETBALL
OFFICE HOURS
MTWTFSS 8 AM - 5 PM
SAT 9 AM - 1 PM
(Mountain Standard Time)

FREE CATALOG
1940 W. STATE
BOISE, IDAHO 83702

AMEX
VISA

PROFESSIONAL HANDICAPPING SYSTEMS

PROFESSIONAL SERIES™
PROFESSIONAL HANDICAPPING TOOLS FROM PROF. JONES
The New PROFESSIONAL SERIES™ Software for the Serious Handicapper

Thoroughbred
• Mini-Pro Analysis™
Complete race analysis for the sophisticated handicapper with single screen input, holding tanks to check entries, powerful use of 30 variables in data manipulation, complete "HELP" functions, and more.
\$149.95

Greyhound
• Analysis Module™
Our comprehensive, full featured package contains Mini-Pro Analysis plus betting analyses, money managers, post position adjusters, fractional adjusters, multi-track abilities, watch lists, and on-screen betting philosophy.
\$249.95

Trotter/Pacer
• Multiple Regression Module™
Using linear regression, this module regresses out factors relating to winning animals and then automatically recalculates the weighting formula as successive races are analyzed to derive the most precise formula possible, dramatically increasing win percentage!
\$149.95

NEW for 1987

BELL CURVE ANALYSIS
CUMULATIVE STATS
Last 4 weeks
Last 2 weeks
Previous Weeks?

CLUSTER ANALYSIS
POWER PLAYS
Rams (40ers)
Bills (Vikings)
Seahawks

PROFESSIONAL LOTTERY/LOTTO™ \$149.95
Cutting edge analysis for the serious professional. Contains Bell Curve, Central Tendency, Cluster Analysis, and 17 Dimutro Systems, for complete, high accuracy analysis of Lottery or Lotto.

PROFESSIONAL SERIES FOOTBALL™ \$199.95
A flexible, high performance football analysis with complete built-in scheduling, excellent file capacity, single input for two teams, and high accuracy, contains predictors for team scores, over/under, non-bets, regular bets and superbets. The regression analysis is adjustable to give results based on any number of previous weeks.

BOOKIE BUSTER™ FOOTBALL ANALYSIS \$149.95
A high accuracy football analysis using 21 separate and structured analyses and a complete database of all NFL games from 1978 to 1986 to predict the spread winner.

Terms: Free shipping all software. Add \$6.00 COD / \$6.00 UPS Blue / \$8.00 International delivery / ID residents add 5%. Allow 3 weeks when paid by personal check. Prices above are for cash or money order only. Add 3% for Visa, MasterCard, and AMEX. Prices subject to change.

Many more programs available.
Call today for a copy of our **FREE CATALOG!**

Circle 74 on Reader Service card.

"I Saved Time & Money with Physical Exam"

1541 Physical Exam Sample Screen

Package includes:

- True digital alignment disk with offset tracks.
- Mechanical Stop Test
- Speed Test
- Illustrated manual with instructions for performing alignment, adjusting speed and stop position.
- Hard copy mode to print test results for future reference.

\$39.95 + S & H per program Please specify drive
1541, 1571, 8050, 8250, 4040, SFD 1001

800-762-5645

Cardinal Software
14840 Build America Dr.
Woodbridge, VA 22191
Info: (703) 491-6494

Circle 192 on Reader Service card.

\$423 SIMPLE C-64 SPRITE EDITOR

I've written a very simple sprite editor for the C-64:

```

0 REM SPRITE DESIGNER-CHRIS BUTLER
10 PRINT "{SHIFT CLR}";POKE650,128
20 FOR T=1TO21:FORQ=1TO24:PRINT".":NEXT:P
   RINT:NEXT
30 V=53248:POKEV+21,4:POKEV+41,1
40 POKEV+4,255:POKEV+5,200
50 POKE2042,13:END
100 Q=0:C=8:FOR Y=0TO21:FOR X=1TO24
110 P=PEEK(1023+X+40*Y)
120 C=C-1:IF P=42 THEN Q=Q+2{UP ARROW}C
130 IF C=0 THEN C=8:G=G+1:POKE831+G,Q:Q=0
140 NEXT X:NEXT Y:END
200 PRINT "{SHIFT CLR}{2 CURSR DNs}":K=0:FOR T
   =0TO63:IF K=0 THEN PRINT "{5 SPACES}DATA "
   ;
210 PRINT RIGHT$(STR$(1000+PEEK(832+T)),3)
   ;
220 K=K+1:IF K=8 THEN K=0:PRINT "{CURSR LF} "
230 NEXT T:POKE53248+21,0:END

```

To use the program, run it, and the blank sprite will be printed on the screen. Now fill in the sprite, using the * character for dots you want on, and any other for dots off.

When the sprite is finished, move the cursor to the blank

line above the Ready prompt and type in RUN 100. The program will scan the screen and print the sprite in actual size to the right of the grid. Then you can change it if necessary.

When your sprite is the way you like it, move the cursor above the word READY again and type in RUN 200. This will create Data statements for the sprite. After they're printed to the screen, just add line numbers and press return for each line.

—CHRIS BUTLER, NOVA SCOTIA, CANADA

\$424 COMPACT C-64 MENUS

Here's an alternative to vertically oriented menus. My routine uses two lines at the top of the screen to display a professional-looking menu with eight options. To make your choice, press the cursor-right key until the desired option is highlighted and then press return. If you use other titles for the menu, be sure they're eight characters long.

```

10 REM C-64 MENU LINES-J.R.CHARNETSKI
20 POKE53280,2:POKE53281,0
30 S=8:DIMS(S):SP$="":HL$="{CTRL 2}"
40 MC$="{CTRL 5}":PRINT "{SHIFT CLR}"MC$
50 FOR I=1TO S:MS(I)="OPTION "+CHR$(64+I):N
   EXT:GOTO90
60 GET A$:IFA$="{CURSR RT}"GOTO90
70 IFA$<>CHR$(13)GOTO60

```

Copy Worldwide Short-wave Radio Signals on Your Computer

Remember the fun of tuning in all those foreign broadcast stations on the short-wave radio? Remember those mysterious sounding coded tone signals that baffled you? Well, most of those beeps & squeals are really digital data transmissions using radioteletype or Morse code. The signals are coming in from weather stations, news services, ships & ham radio operators all over the world. Our short-wave listener cartridge, the "SWL", will bring that data from your radio right to the video screen. You'll see the actual text as it's being sent from those far away transmitters.

The "SWL" contains the program in ROM as well as radio interface circuit to copy

Morse code and all speeds/shifts of radioteletype. It comes with a cable to connect to your radio's speaker/earphone jack, demo cassette, and an excellent manual that contains a wealth of information on how to get the most out of short-wave digital DXing, even if you're brand new at it.

For about the price of another "Pac-Zapper" game, you can tie your Commodore 64, 128 or VIC-20 into the exciting world of digital communications with the Microlog SWL. \$64. Postpaid, U.S. MICROLOG CORPORATION, 20270 Goldenrod Lane, Germantown, Maryland 20874 Telephone: 301-428-3227

MICROLOG

INNOVATORS IN DIGITAL COMMUNICATION



MAGIC

```

80 PRINT "{CTRL 2}";:ONXGOTO130,130,130,130
,130,130,130,130
90 PRINT "{HOME}{CTRL 9}";:X=X+1:IFX>STHENX
=1
100 FORI=1TOS:IFI<>XTHENPRINT SP$M$(I)SP$;
:GOTO120
110 PRINT SP$HL$M$(I)MC$SP$;
120 NEXT:PRINT:GOTO60
130 PRINT "YOUR CHOICE: "M$(X)

```

—JOSEPH R. CHARNETSKI, DALLAS, PA

```

70 INPUT"YOU BE RECEIVING (DECIMAL)";C
80 PRINT:PRINT:PRINT"YEAR","BALANCE","INTE
REST","TOTAL"
90 FORZ=1TO39:PRINT"*";:NEXT:PRINT
100 FORY=1TOX:B=A+T:I=C*B:T=B+I:Z=T+Z:L=L+
I
110 PRINTY,B,I,T:NEXT Y
120 FORZ=1TO39:PRINT"*";:NEXT:PRINT
130 PRINT:PRINT:PRINT"THE TOTAL RECEIVED W
AS" T
140 PRINT"THE TOTAL INTEREST WAS" L

```

—DAVID ADAMS, PORTAGE, IN

\$425 WATCHING IRA GROW

This short program shows you how your IRA account can grow. It's only an estimate, because interest rates vary over the years. Also, the program uses simple interest added once a year, rather than compound interest, so your IRA will probably earn more than the program indicates.

```

10 REM IRA ESTIMATE-DAVID ADAMS
20 PRINT"HOW MUCH WOULD YOU LIKE TO"
30 INPUT"INVEST YEARLY";A:PRINT
40 PRINT"HOW MANY YEARS WOULD YOU"
50 INPUT"LIKE TO INVEST YOUR MONEY";X:PRIN
T
60 PRINT"WHAT PERCENT INTEREST WILL"

```

\$426 C-128 CHECKSUM LIST

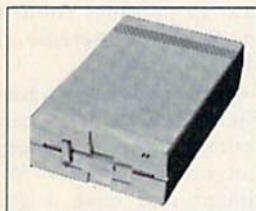
If you submit your Magic trick program listings to *RUN* in hard copy only, it'll help the staff type in the listings if you use the following program to print out checksums:

```

10 REM 128 CHECKSUM LIST-LARRY PANKEY
20 KEY1,CHR$(147)+"L=VAL(L$):L=L+10:L$=STR
$(L)+"CHR$(13)+"KEY3,"+CHR$(34)+"LIST"+
CHR$(34)+"L$+CHR$(13)+"CHR$(13)
30 KEY5,"{4 CRSR UPs}"+CHR$(13)
40 KEY7,"{15 SHFT INSTs}PRINT#4,L$"+CHR$(3
4)+"":REM*"+CHR$(13)

```

NEW! COMMODORE COMPATIBLE! EXCEL-71 Disk Drive



Completely compatible with the C128. AND compatible with the 1571! Yet smaller and more reliable.

List Price: \$349

NOW ONLY \$209!

FULL ONE-YEAR WARRANTY
SATISFACTION GUARANTEED
FAST DELIVERY!

ALL Major Credit
Cards Accepted

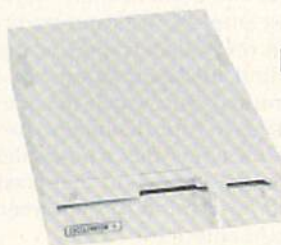
**6 am to 6 pm
6 days a week**

ORDER NOW TOLL-FREE
1-800-356-5178

ECI

Emerald Components International
Dept. R, P.O. Box 1441, Eugene, OR 97440
In Oregon, for orders and
customer service: 503/683-1154

FSD-2 Commodore Compatible Disk Drive



**Faster, Quieter, More
Compact and More
Reliable Than the
1541 & 1541C!**

NOW ONLY \$159

Guaranteed 100% Compatibility
It even enhances GEOS!

Full One-Year Warranty
Satisfaction Guaranteed
Fast Delivery

**Advanced Direct
Drive Technology**
Comes Ready to Run and Works
Smoothly with the Commodore
64, 64C, VIC 20, Plus 4, C 128 (in
64 mode) and 16.

CALL NOW TOLL-FREE
1-800-356-5178

ECI

Emerald Components International
Dept. R, P.O. Box 1441, Eugene, OR 97440
Customer Service: 503/683-1154

RUN

THE COMMODORE 64/128 USER'S GUIDE

October 1987

A CWC/I Publication

U.S.A. \$2.95

CANADA \$3.95

U.K. £2.00

Discover Commodore's New Look and New Features

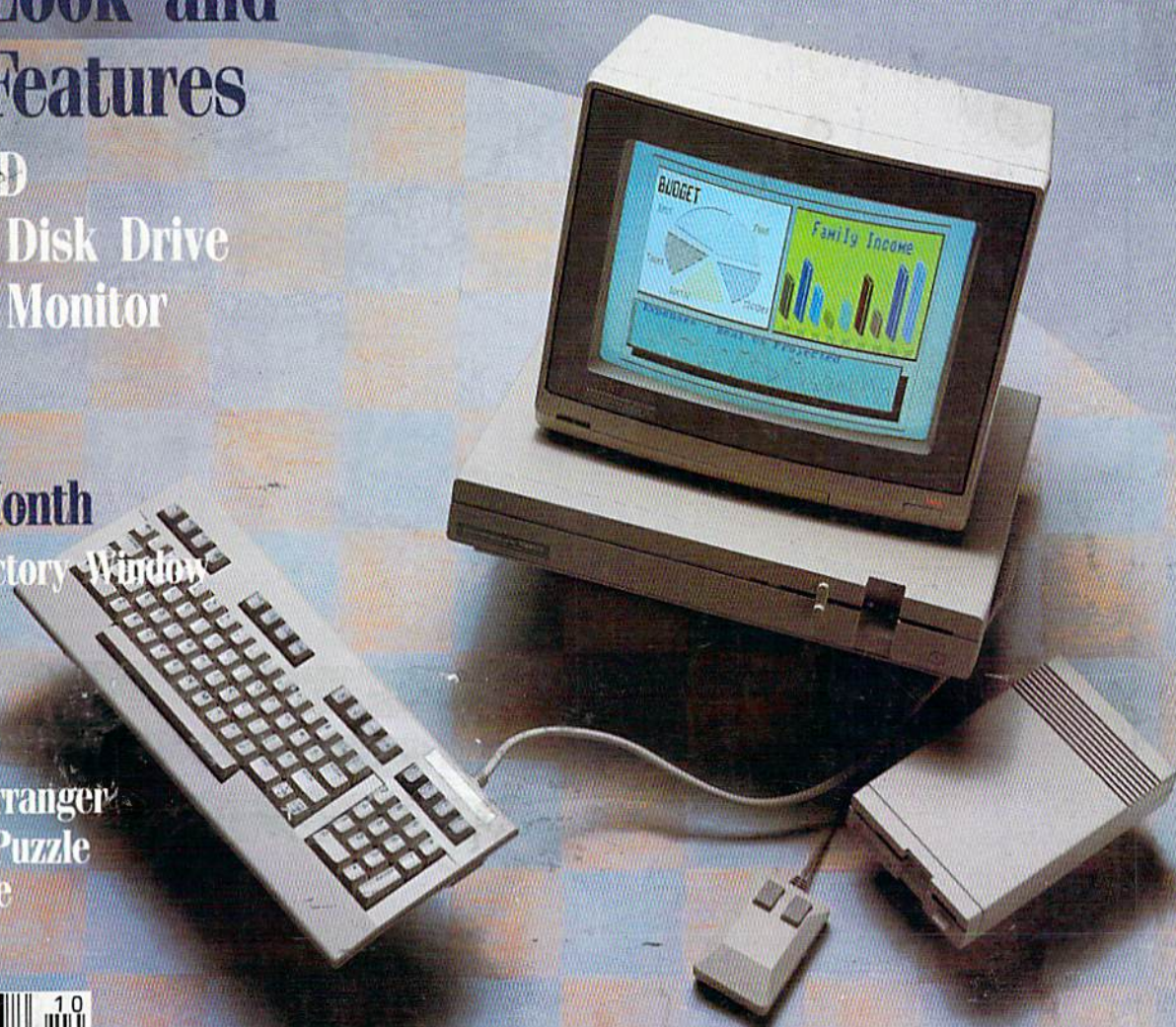
- ▶ C-128D
- ▶ 1581 Disk Drive
- ▶ 2002 Monitor

Program of the Month

- ▶ 64 Directory Window

Plus

- ▶ DF Copy
- ▶ Array Arranger
- ▶ Fifteen Puzzle Challenge



MAGIC

*Load and run C-128 programs the easy way;
unlock C-128 files; control C-64 Input statements; turn your
word processor into an outline processor; and more.*

Compiled by JIM BORDEN

\$427 FILE-COPYING TIP

You can do a favor for both your disks and drive by using a file-copy, rather than disk-copy, program to copy files to a new disk. Here's why. When you use a disk-copy program to copy files, your drive spends a lot of time searching for free blocks to copy the files in the order in which they appear on the original disk. This results in greater wear and tear on the drive during the load and save process.

However, copying a disk with a file-copy program wastes no time searching for free blocks and reproduces the files in the same order as they appear on the original disk

—ROBERT B. COOK, BRAINTREE, MA

\$428 C-128 DIRECTORY RUN

Loading and running programs on your C-128 is easy with my method. Append your filenames with a shifted space and a shifted @ before you save them. Then, when you're ready to load and run a program, list the directory, move the cursor to the filename and press F6. That's all there is to it!

—FRANK KLEIN, SOUTH ELGIN, IL

\$429 C-128 AND LOCKED FILES

Unlike the C-64, the C-128 can't load locked files. But you can get around this by first loading the locked file in 64

mode to unlock it, then copying the file to another disk. Now your unlocked copy is ready to load in C-128 mode. You can use the locked copy as a backup.

—L. M. LABAR, BETHLEHEM, PA

\$42B 1571 DOUBLE-SIDE RESTORE

Use my program to restore to 1571 format any double-sided disk that you have unintentionally validated in 1541 mode.

```
10 PRINT "{SHIFT CLR}FIX 1571 DISK AFTER 154
1 MODE VALIDATE":REM BILL DEVOS
20 PRINT"INSERT 1571 DISK AND HIT RETURN"
30 GET A$:IFA$=""THEN30
40 OPEN15,8,15,"I0":PRINT#15,"U0>M1":GOSUB
100
50 OPEN1,8,5,"#":PRINT#15,"U1:5 0 18 0"
60 PRINT#15,"B-P: 5 3":FX$=CHR$(128)
70 PRINT#1,FX$:PRINT#15,"U2:5 0 18 0"
80 GOSUB 100:PRINT#15,"I0"
90 CLOSE1:CLOSE15:PRINT"DONE":END
100 INPUT#15,EN,EM$,ET,ES
110 IFEN<20THEN RETURN
120 PRINT"DISK ERROR!"
```

TRICK OF THE MONTH

\$42A C-64 LIMITED INPUT SUBROUTINE

My routine lets you control the kind of data you want to enter into Input statements on the C-64. First, you control the prompt with a Print statement. The variable L is used to limit the length of the input. If L=5, for example, only five characters may be entered.

The variable T controls the type of character it will accept. If you set T equal to 0, it'll accept any printable character; if it equals 1, it'll accept only numbers; and if it equals 2, it'll accept only letters. The variable S\$ holds the string you input. Here are some examples:

```
PRINT "ANY STRING: ";T=0:L=80:GOSUB10000
PRINT "UP TO 10 CHARACTERS: ";T=0:L=10:GOSUB10000
PRINT "SOME NUMBERS = ";T=1:L=80:GOSUB10000
PRINT "UP TO 8 LETTERS: ";T=2:L=8:GOSUB10000
```

Experiment with these examples in Direct mode. I'm sure you'll agree that this is a versatile routine.

9999 REM ULTIMATE INPUT ROUTINE—GEOFFREY K
ERCHNER

```
10000 POKE204,0:Z=0:S$="":PRINT" {CRSR LF}
";:POKE198,0:IF L=0THEN L=255
10010 GET A$:IFA$=""THEN 10010
10020 IF L$="" THEN 10050
10030 L=0:FOR J=1TOLEN(L$):IF A$=MID$(L$,J
,1)THENL=L+1
10040 NEXT:ON L+1 GOTO 10010,10010
10050 IF A$=CHR$(13)THEN PRINT" ":POKE204,
1:POKE 207,0:L=0:T=0:RETURN
10060 IF A$=CHR$(20)ANDZ<>0THENZ=Z-1:S$=LE
FT$(S$,Z):PRINT" {2 CRSR LFs} {CRSR
LF}";:GOTO10010
10070 A=ASC(A$):IFA<32OR(A<160 AND A>127)
OR L=Z THEN10010
10080 IF T=1 AND (A<48 OR A>57) THEN 10010
10090 IF T=2 AND (A<65 OR A>90) AND A<>32
THEN 10010
10100 PRINTA$;:POKE212,0:PRINT" {CRSR LF}"
";:Z=Z+1:S$=S$+A$:IFL$=""THEN10010
10110 PRINT" ":POKE204,1:POKE207,0:L$="":L
=0:RETURN
```

—GEOFFREY KERCHNER, OAK RIDGE, TN

**Slam,
dunk
on
your
PC!**



In NBA ... The Basketball Strategy Game ...

- 20 Great NBA Teams
- All 10 Players on Court "Five on Five"
- Includes Stat Keeper Program
- Three Modes of Play: Solitaire, Head-to-Head, Autoplay Versions

\$39.95

Season Expansion Disks Coming Soon!



Available at leading game and computer stores
... or call TOLL FREE 1-800-638-9292
for ordering information. Ask for Operator R10.



microcomputer games DIVISION
The Avalon Hill Game Company

A MONARCH AVALON, INC. COMPANY
4517 Harford Road, Baltimore, MD 21214

MAGIC

```
130 PRINT EN;EM$;ET;ES
140 CLOSE1:CLOSE15:END
```

—BILL DE VOS, CLIFTON, NJ

\$42C C-128 ADDRESS LABEL SAVER

The standard 3½-inch address labels are too big for the return address on small envelopes, so I wrote a program that prints the address twice in Condensed mode on the same label, to cut in half the size and number of labels you use.

You can input up to five lines per label. If you need just three lines, press return over the first and last lines. If your name or address is very long, change the value of the SPC(30) in line 120. A smaller number will print the two labels closer together.

```
10 REM MINI LABELS- MARY E. WILSON
20 PRINT CHR$(14):OPEN4,4,7:ES$=CHR$(27)
30 PRINT#4,ES$+"{SHFT B}" +CHR$(3);:REM COM
  PRESSED
40 PRINT#4,ES$+"0";:REM 1/8" SPACING
50 PRINT"{SHFT CLR}{2 CRSR DNs} IF COMMAS
  ARE DESIRED, ENCLOSE LINE IN QUOTES{2 C
  RSR DNs}"
60 INPUT"HOW MANY LABELS";N
70 FORZ=1TO5:PRINT"LINE"Z;:INPUTA$(Z):NEXT
  Z

80 PRINT"{2 CRSR DNs}IS THIS CORRECT? (Y/N
  )"
90 GET AN$:IFAN$<>"Y"ANDAN$<>"N"THEN90
100 IF AN$="N"THEN RUN
110 FOR I=1 TO N:PRINT#4
120 FORZ=1TO5:PRINT#4,A$(Z)SPC(30-LEN(A$(Z
  )))A$(Z):NEXT Z
130 PRINT#4:PRINT#4:NEXT:CLOSE4
```

—MARY E. WILSON, CLEARWATER, FL

\$42D SCREEN EDIT TRICK

Here's a quick and simple way to move part of one line to merge with another line in a listing. Let's combine lines 10 and 40, below.

```
10 A=6:B=1:A$="XYZ"
20 IF A$="" THEN 100
30 X=Q*5+120
40 C$="TO"
```

First, add a colon before the C\$ in line 40, move the cursor back to the colon and use the insert-delete key to put in enough spaces to move the colon just past the text you want to insert. Hit the return key. You should now have a display like this:

```
10 A=6:B=1:A$="XYZ"
20 IF A$="" THEN 100
30 X=Q*5+120
40 :C$="TO"
```

Now move the cursor to line 20 and list line 10. This will place line 10 in the blank spaces without erasing the original line 40 text. The screen should look like this:

```
10 A=6:B=1:A$="XYZ"
LIST10
```

Continued on p. 126.

From p. 14.

```
30 X=Q*5+120
```

```
10 A=6:B=1:A$="XYZ":C$="TO"
```

Now just move the cursor back up and type 40 over the 10 in your revised line and hit return. If the original line 10 is not needed, delete it.

This seems more difficult than it is. It'll come easy after you use it a few times.

—JEFF STAFFORD, ROCHESTER, IN

\$42E EDITING CURSOR MOVEMENTS

It's happened to all of us: You've typed the wrong cursor character in a line within quotes and you've got to correct it. Here's an easy way to correct the line without retyping all of it.

List the line and move the cursor to the character after the error, press the delete key once and the insert key once. This will put you in Quote mode so that you can substitute the correct character. Type in the correct character to exit Quote mode, and press return to enter the changed line.

Try this a few times on a practice line containing a Print statement with several cursor characters inside quotes.

—L. M. LABAR, BETHLEHEM, PA

\$42F FASTER IF-THENS

If-Then statements containing the word AND execute more quickly if you replace each AND with THEN IF. This method works faster because program execution is automatically transferred to the next line if any single condition proves false. Try to put the condition most often false first to get the greatest gain in speed. Use this short program to compare the AND and THEN IF methods:

```
10 REM FASTER IF/THEN-GEORGE MONTELEONE
20 REM LINES 20-40 SHOW OLD METHOD
30 TI$="00000000":FORI=1TO10000
40 IF I=1000 AND I/3*20=4 AND INT(I/256)+39
   =I THEN F=F+1
50 NEXT:PRINT"TIME FOR OLD METHOD:"TI
60 REM LINES 70-90 DO SAME AS ABOVE
70 REM EACH 'AND' REPLACED BY 'THEN IF'
80 TI$="00000000":FORI=1TO10000
90 IF I=1000 THEN IF I/3*20=4 THEN IF INT(I
   /256)+39=I THEN F=F+1
100 NEXT:PRINT"TIME FOR NEW METHOD:"TI
```

—GEORGE MONTELEONE, WINDSOR, ONTARIO, CANADA

\$430 REMINDER 128 REVISITED

If you make Reminder 128, RUN's electronic desk calendar (see the January 1987 issue), the autoboot program on your most frequently used disk, such as your word processor, you won't have to remember to run it. I use RUN Script often, so I made up a disk with the RUN Script files on it along with the Reminder 128 program. You can put Reminder 128 as the first program and run it with the shifted run-stop key or add a boot sector. Make the following change to the Reminder 128 program before saving it to the new disk:

```
2295 PRINT "LOADING RUN SCRIPT..."
```

```
2297 RUN "BOOT"
```

If you want to run a machine language program, replace

the Run command with BOOT in line 2297. Now, after your appointment calendar is checked, your word processor will be loaded for your use. (Change the text in quotes to suit your own program.)

—RANDY W. BARTHEL, CINCINNATI, OH

\$431 HEX-TO-DECIMAL CONVERTER

My program converts hex numbers to decimal form. It can convert numbers up to \$3B9AC9FF (999,999,999 in decimal). The program works on any Commodore computer.

```
10 REM LARGE HEX CONVERSION (ALL)-ROGER MOORE
20 INPUT"NUMBER IN HEX";H$:L=LEN(H$):S=0
30 FORI=LTO1STEP-1:A=ASC(MID$(H$,I,1))
40 IFA>64ANDA<71 THEN S=S+(A-55)*16{UP ARR
   OW}(L-I):GOTO70
50 IFA<48ORA>57 THEN80
60 S=S+(A-48)*16{UP ARROW}(L-I)
70 NEXT:PRINT"DECIMAL EQUIVALENT IS:"S:GOT
   O20
80 PRINT"THAT IS NOT A VALID HEX NUMBER!"
```

—ROGER MOORE, OAK RIDGE, TN

\$432 C-128 RADAR LOCATOR

While I was using the Draw command, I got unexpected results, and upon checking my program, I found that I had used a syntax that allows a line to be drawn out a certain distance from the center at a given angle. After further experimentation, I found that the Locate command allows the same syntax. This short program shows how this use of Draw and Locate works:

```
0 REM C-128 RADAR-ANDRES KICELEFF
10 COLOR0,1:COLOR1,2:GRAPHIC1,1:CIRCLE1,16
   0,100,83,83:CIRCLE1,160,100,40,40
20 L=35:DI=0:VE=5:LOCATE160,100
30 DRAW1,160,100TOL;DI:LOCATE10;DI:DRAW1,R
   DOT(0),RDOT(1)TOL;DI:LOCATE160,100:DRAW
   0,160,100TOL;DI:LOCATE10;DI:DRAW0,RD
   OT(1)TOL;DI:DI=DI+VE
40 IFDI>360THENDI=DI-360:GOTO30:ELSEGOTO30
```

—ANDRES KICELEFF, BUENOS AIRES, ARGENTINA

\$433 80-COLUMN REGISTER TABLE

With this program, you can examine each of the 37 registers of the C-128's 8563 chip. It also shows how to use the RREG command to pass the computer's registers back to the Basic program. (See trick \$3BA in the March Magic column for more about the RREG command.)

If you have a copy of the *Commodore 128 Programmer's Reference Guide*, you can use the printout to better understand the 8563 chip by comparing the printout to the register map on page 294.

The program should work with any printer. If you don't have a printer, change the OPEN4,4 in line 4 to OPEN4,3 to display the chart on the screen.

```
0 REM 8563 REG.TABLE-TOM SMITH
2 PRINT"{SHFT CLR}{3 CRSR DNs}{2 SPACES}BE
   SURE PRINTER IS ON...":PRINT"PRESS ANY
```


MAGIC

```

KEY TO START..."
4 GETKEY$:OPEN4,4:GOSUB18:PRINT#4,"! * *
  * * 8563 80-COL CHIP REGISTERS * * * * !

6 GOSUB18:PRINT#4,"!{12 SPACES}!{7 SPACES}
  BINARY BIT TABLE{8 SPACES}!"
8 PRINT#4,"! REG#{2 SPACES}DEC# ! 7 ! 6 !
  5 ! 4 ! 3 ! 2 ! 1 ! 0 !":GOSUB18
10 FORZ=0TO36:SYS52698,,Z:RREG A:PRINT#4,"
  ! "N;SPC(4-LEN(STR$(N)))A;
12 PRINT#4,SPC(5-LEN(STR$(A)))"!";
14 FORL=7TO0STEP-1:PRINT#4,-((AAND2{UP ARR
  OW}L)=2{UP ARROW}L)"!";:NEXT:PRINT#4:N=
  N+1:NEXT
16 GOSUB18:PRINT#4:CLOSE4:END
18 FORL=1TO23:PRINT#4,"--";:NEXT:PRINT#4:R
  ETURN

```

—THOMAS B. SMITH, GALLIPOLIS, OH

\$434 C-64 CURSOR LOCATOR

This is my method of placing the cursor where I want it on my 64 screen. It's less trouble to use than some other routines I've tried, and it requires only 36 bytes of memory. I usually place the routine beginning at location 679, but you may relocate it to any available 36 bytes. Put this short routine in your programs:

After this section is run in your program, just use SYS SA,C,R to move the cursor. The value of SA is the beginning of the ML code. The column is passed next as C (0 to 39) and the row is passed last as R (0 to 24). You may use any number or variable in place of C or R as long as they are within the legal range.

```

0 REM 64 PRINT @-HARRY SIMMS
10 SA=679:FORJ=SATOSA+35:READ B:C=B+B:POKE
  J,B:NEXT
15 IFC<>4639 THEN PRINT"DATA ERROR!!"
20 DATA 32,253,174,32,158,183,138,56,201,4
  0,144,5,162,14,76,139,227,72
30 DATA 32,253,174,32,158,183,138,56,201,2
  5,176,238,104,168,24,76,240,255

```

—HARRY SIMMS, TEXARKANA, TX

\$435 C-128 JUMBO HI-RES TEXT

This short subroutine takes advantage of the C-128's powerful graphics commands to create double-size characters on the hi-res, 40-column screen. Three variables are used in the subroutine:

—T\$ for the text to be printed
 —XT for the horizontal (X) position
 —YT for the vertical (Y) position

Here's the subroutine with an example:

For an added twist, add YT = YT + .5: before the NEXT in line 1000.

```

10 REM JUMBO HI-RES TEXT-JASON S. MACDONALD
20 GRAPHIC2,1,20:REM-EXAMPLES-:
30 XT=25:YT=35:T$="MAGIC IS":GOSUB1000
40 XT=55:YT=60:T$="GREAT FUN!!":GOSUB1000:
  END

```

Full Speed



Ahead

Introducing the Lt. Kernal® The Ultimate Hard Disk System for the Commodore C-64/128®

Featuring:

- * Runs most copy-protected software
- * Supports both C-64 and 128 modes of operation
- * 42 additional or enhanced system commands
- * Disk-access speed more than 100 times faster than the 1541 floppy disk drive
- * Automatic power-up execution of any application program
- * Built-in CP/M™-like command line features
- * Up to 11 logical drives may be defined on the hard disk
- * DOS allows up to 7 files to be OPEN for reading and writing simultaneously
- * DOS differentiates between BASIC and machine language programs
- * Built-in backup and restore facilities including FASTCOPY
- * Standard capacity of 20 Megabytes—expandable

Supports CPM

The Lt. Kernal is covered by a one year limited warranty.

C-64 version \$899.95
C-128 version \$949.95

Lt. Kernal is a registered TM of Fiscal Information, Inc.
 C-64/128 are reg. TMs of Commodore Business Machines, Inc.

Xetec, Inc. 2804 Arnold Rd. Salina, Ks. 67401 (913) 827-0685

1541 COMPATIBLE DISK DRIVE \$159

APPLE II
COMPATIBLE DRIVES
JOYSTICKS...MODEMS

TO ORDER CALL TOLL FREE

1-800-283-6274

We guarantee your satisfaction!



NORTH AMERICAN
PRODUCTS
INTERNATIONAL

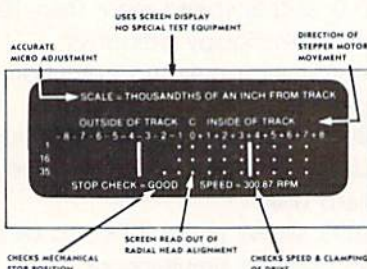
5892 MAIN STREET / SPRINGFIELD, OR 97478 / 503-741-1222

Circle 55 on Reader Service card.

"I Saved Time & Money with Physical Exam"

I use a data base to keep records for our club. Last week I experienced read errors. Luckily I have a 1541 Physical Exam program. The alignment test confirmed what I had suspected, my drive was out of alignment. I am happy to report that I aligned my drive MYSELF. I avoided the wait for repair and paid a fraction of the cost.

1541 Physical Exam Sample Screen



Package includes: • True digital alignment disk with offset tracks. • Mechanical Stop Test • Speed Test • Illustrated manual with instructions for performing alignment, adjusting speed and stop position. • Hard copy mode to print test results for future reference.

\$39.95 + S & H per program Please specify drive
1541, 1571, 8050, 8250, 4040, SFD 1001

Order Toll Free
10-6 MON-SAT

800-762-5645



Cardinal Software
14840 Build America Dr.
Woodbridge, VA 22191
Info: (703) 491-6494

MAGIC

```
1000 CHAR1,0,24,T$:FORA=1TOLEN(T$)*8:SSHAP
E A$,A-1,192,A-1,200:GSHAPEA$,XT+X1-1
,YT:GSHAPE A$,XT+X1,YT:X1=X1+2:NEXT:X
1=0
1010 CHAR1,0,24,"{40 SPACES}":RETURN
```

—JASON S. MACDONALD, MENA, AR

\$436 C-64 WINNING FANFARE

Here's a sound effect to reward a winning game player or acknowledge a correct answer. Use it as a subroutine in your C-64 programs.

```
0 REM WINNING FANFARE-J.R.CHARNETSKI
800 T=87:N$="251331421502421502"
810 S=54272:POKES+6,96:POKES+24,15
820 FORI=1TO18 STEP3
830 POKES+1,VAL(MID$(N$,I,2)):POKES+4,33
840 FORJ=1TOT*VAL(MID$(N$,I+2,1)):NEXT
850 POKES+4,0:NEXT:REM [RETURN]
```

—JOSEPH R. CHARNETSKI, DALLAS, PA

\$437 FAST-RUN

The instruction manual for my Epyx Fast Load cartridge does not give a command for loading and running any Basic program. However, you can easily do this by adding a delimiter to the end of the filename. Then use shifted run-stop. The asterisk (*) is the best delimiter, since it will serve double-duty as both a wild card in the filename and as the delimiter.

Here's an example of loading the first file on the disk that begins with the letters DO: /DO*{shift/run-stop}

Note that a colon isn't necessary.

—ROBERT E. TUM SUDEN, FLORAL PARK, NY

\$438 INTERESTING FIGURES

If you're speculating on the future value of an investment that accumulates interest at a fixed rate, use this program to calculate the interest on your principal when interest is compounded daily, monthly or quarterly. The program displays the interest and rounds the total (interest and principal) to two decimal places.

```
10 REM INTEREST CALCULATOR-MARIE CHARNETSK
I
20 PRINT"(SHIFT CLR){CURSR DN}IS THE INTERES
T COMPOUNDED BY"
30 INPUT "(D)AY (M)ONTH OR (Q)UARTER";A$
40 INPUT"(CURSR DN)ANNUAL INTEREST RATE (AS
%)";R
50 INPUT "(CURSR DN)AMOUNT OF PRINCIPAL";P
60 INPUT "(CURSR DN) FOR HOW MANY MONTHS";T
```

```
70 I=12:IFA$="D"THEN I=365
80 IF A$="Q" THEN I=4
90 C=R/100/I:J=T/12*I:S=P
100 R=C+1:P=R{UP ARROW}J*P
110 T$=MID$(STR$(INT(P/.01+.5)),2)
```


MAGIC

```
120 T$=LEFT$(T$,LEN(T$)-2)+". "+RIGHT$(T$,2)
130 PRINT"(CRSR DN)TOTAL INTEREST={CTRL 9}
    "P-S
140 PRINT"(CRSR DN)PRINCIPAL+INTEREST=$"T$
```

—MARIE CHARNETSKI, PLAINS, PA

\$439 SEARCH AND DESTROY?

When using your word processor's search-and-replace option, take care to replace only what you really want. You could, for example, use the letters US throughout a document for United States and later replace the abbreviation with the complete spelling. However, some word processors will find both upper- and lowercase versions. So it's possible you might replace "must" with "mUnited Stated". To prevent this, use an unusual combination, such as u1s or u*s. This should ensure that you do not destroy any text you don't want to replace.

—JEREMY A. MICHELE, BIG TIMBER, MT

\$43A C-128 MAGIC CLOCK

The following program uses the Time of Day clock, which keeps time more accurately than TI\$.

Run the program and enter the time. It'll keep time until you turn off or reset your computer. Tap the ALT key to print the time on the next screen line.

Pressing run-stop/restore disables the ALT key without affecting the time, and entering SYS 4886 reactivates ALT.

```
10 REM 128 MAGIC CLOCK-NELSON SEARCY
30 KEY4,"BANK15:SYS4886"+CHR$(13)
40 INPUT "HR,MIN,SEC,AM/PM";H,M,S,A$
50 IF H>12ORH>59ORS>59THEN40
60 IF H>9THENH=16+H-10
70 IF M>9THENM=16*VAL(LEFT$(STR$(M),2))+VAL
    (RIGHT$(STR$(M),1))
80 IF S>9THENS=16*VAL(LEFT$(STR$(S),2))+VAL
    (RIGHT$(STR$(S),1))
90 IF LEFT$(A$,1)="P" THENH=H+12
100 POKE56331,H:POKE56330,M:POKE56329,S:PO
    KE56328,0
110 FORA=4886 TO 5006:READ J:CS=CS+J:POKEA
    ,J:NEXT
120 IFCS<>10404THENPRINT"DATA ERROR!":END
130 SYS4886:NEW
140 DATA 120,169,35,141,20,3,169,19,141,21
    ,3,88,96,165,211,201,8,208,96
150 DATA 173,11,220,48,4,162,65,208,2,162,
    80,142,134,19,41,127,32,102,19
160 DATA 201,48,208,2,169,32,141,125,19,14
    2,126,19,173,10,220,32,102,19
170 DATA 141,128,19,142,129,19,173,9,220,3
    2,102,19,141,131,19,142,132,19
180 DATA 173,8,220,76,119,19,72,41,15,9,48
    ,170,104,74,74,74,74,9,48,96,0,0
190 DATA 0,32,125,255,141,42,32,48,48,58,4
```

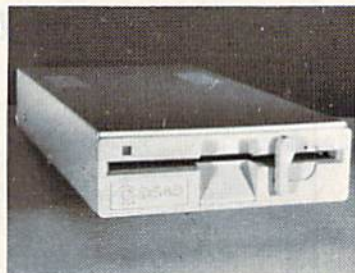
D540

1541 COMPATIBLE DISK DRIVE
GEOS, SUPERKIT, FAST HACK'EM COMPATIBLE

• EXTERNAL DEVICE NO
SELECTION

• UTILITY PROGRAMS
FOR FAST DISKETTE
FORMAT

\$155



To Order

Call 1-800-521-9298

(In NJ, Dial 201-874-4072)

VISA, MASTERCARD or Money Order. Allow \$8.00 shipping & handling, and \$5.00 for credit card service. (NJ residents add \$9.30 tax). Send mail order with payment to:

H&M MARKETING

P.O. BOX 8339 SOMERVILLE, NJ 08876

Circle 4 on Reader Service card.

FUN
GEOGRAPHY
WORLD EDITION
\$39.95

- An ENTERTAINING and EDUCATIONAL package for the entire family
- Browse through the world and learn a wealth of interesting facts and figures at your finger tips
- Extensive use of color graphics for superb visual displays
- Nearly 1 megabyte of textual data contained on 5 disks
- Requires Commodore 128, 1 disk drive, joy stick (color monitor recommended)

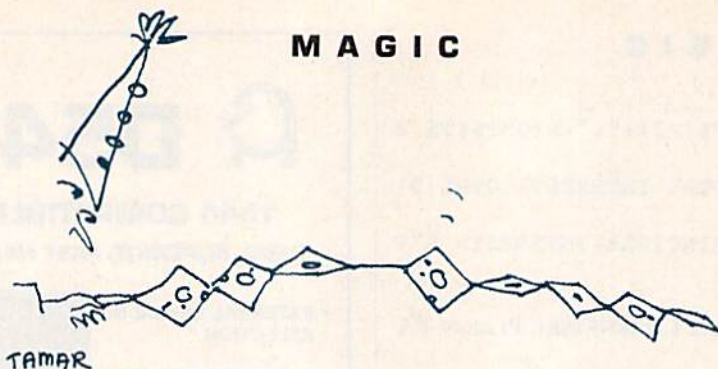
Send cash, check or money order to:

California Computing Specialists
Dept. A

5102 Neptune, Newport Beach, CA 92663
714-548-4144

Calif. residents add 6% sales tax

MAGIC



TAMAR

8, 48, 58, 48, 48, 32, 80, 141, 0, 76
200 DATA 101, 250, 0, 0, 0

—NELSON SEARCY, FOREST CITY, NC

\$43B A SIMPLE THOUGHT PROCESSOR

If your word processor has a block-move function, as in RUN Script 64 or 128, you already have a simple and easy-to-use thought, or outline, processor. For readers not familiar with this type of program, a thought processor organizes your thoughts into a coherent outline. They're particularly useful for writing projects such as business reports and school term papers, and even for letters.

First type in each thought as a simple sentence, followed by a blank line. Then use the block-move feature to arrange your sentences in the appropriate order. Now you have an organized outline to work from. It's that easy!

—DITTO AND E.T. BJORNSEN, HILLSBORO, NH ■

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128, not for the C-128 alone.

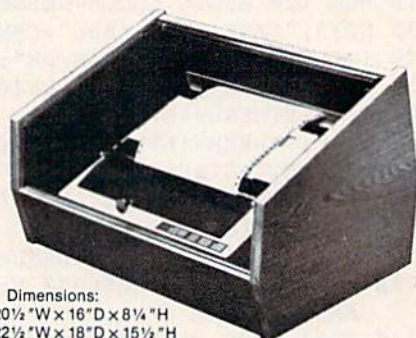
If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

Quality acoustic enclosure made affordable Introducing the "Sound Trap" from **-KETEK**

We offer the **total solution** to complete your "office at home" for the **special introductory price of only**

- Fits all popular 80 column printers
- Sturdy wood construction
- Sound absorbing foam lining reduces printer noise up to 90%
- Tilted for easy printer viewing
- Attractive woodgrain finish compliments any surroundings
- Clear acrylic lid keeps sound in and dust out
- Unique slide-out shelf catches printout, eliminating the need for a costly catch-basket

\$99.⁹⁵



Dimensions:
Inside 20 1/2" W x 16" D x 8 1/4" H
Outside 22 1/2" W x 18" D x 15 1/2" H

Compare to other enclosures of similar quality and dimensions costing at least \$139.95! That doesn't include "extras" like a catch-basket and a stand to raise the enclosure which are already incorporated into our design!

Cramped for extra space? Our optional cart is specially designed for use with the "Sound Trap". It has the same quality wood construction and casters for mobility. **\$149.95**



Order Toll Free 1-800-626-4582
Iowa Residents Call 1-319-338-7123

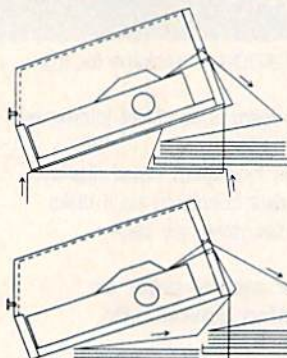


Shipping/Handling:
Sound Trap \$12.00
Cart \$19.00

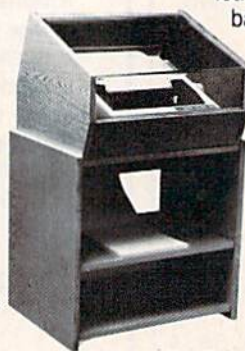
Or Send Check or Money Order to:

-KETEK

P.O. Box 203, Oakdale, IA 52319



Unique design allows for many space-saving paper management configurations.



Cart Dimensions: 24 1/4" W x 18" D x 25" H

The "Sound Trap" is available with an optional fan to dissipate heat build-up. Integrated AC outlet and master power switch activates both printer and fan.

\$49.95

RUN

THE COMMODORE 64/128 USER'S GUIDE

November 1987

A CWC/I Publication

U.S.A. \$2.95

CANADA \$3.95

U.K. £2.00

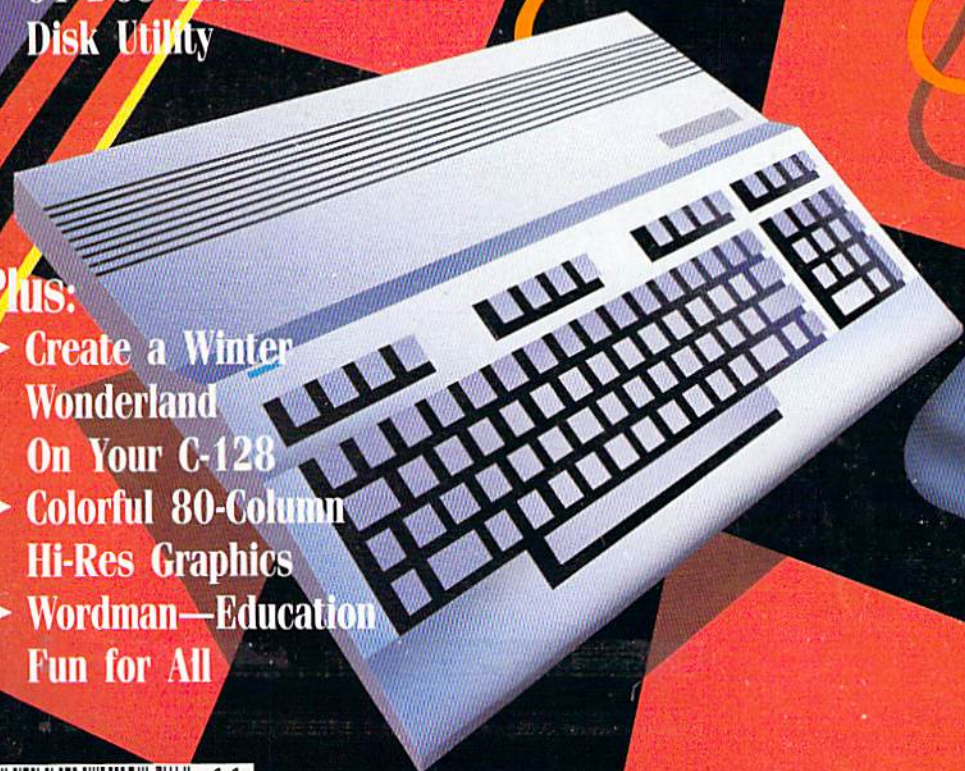
Explore the Games You Can Play

Program of the Month

- ▶ 64 DOS Shell—A Versatile Disk Utility

Plus:

- ▶ Create a Winter Wonderland On Your C-128
- ▶ Colorful 80-Column Hi-Res Graphics
- ▶ Wordman—Education Fun for All



N.C.

MAGIC

Simplify your disk loads; give your child a drawing program that's easy to use; produce seven consecutive sprite sizes; toggle between two 80-column screens; and more.

Compiled by JIM BORDEN

\$43C C-128 DIRECTORY NAME ARRAY

I liked C-64 Directory Name Array (July 1987) so much that I wrote this version for the C-128. In the process, I added a variable, F, for pattern matching.

```
5 REM C128 DIR READ-JON R CURTIS
10 FORI=3072TO3279:READX$:X=DEC(X$):POKEI,
  X:T=T+X:NEXT
15 IFT<>28041THENPRINT"DATA ERR.":END
20 POKE58,243:CLR:F$="":X=LEN(F$)
25 FORI=1TOX:POKEI+3282,ASC(MID$(F$,I)):NE
  XT:POKE3082,X
30 DATA 169,14,162,8,160,0,32,186,255,169,
  1,162,211,160,12,32,189,255,32,192
35 DATA 255,162,14,32,198,255,160,0,140,21
  0,12,132,250,140,209,12,165,50,133
40 DATA 254,24,165,49,105,7,144,2,230,254,
  133,253,169,0,133,251,169,243,133,252
45 DATA 160,1,32,207,255,166,144,240,13,32
  ,204,255,169,14,32,195,255,174,209,12
50 DATA 202,96,192,6,144,54,201,34,208,10,
  173,210,12,73,1,141,210,12,16,40,174
55 DATA 210,12,208,39,192,32,208,31,169,25
  3,141,185,2,165,250,162,1,160,0,32
60 DATA 119,255,132,250,136,24,165,253,105
  ,3,144,2,230,254,133,253,76,192,12
65 DATA 200,76,61,12,140,208,12,160,0,162,
  251,142,185,2,162,1,32,119,255,165
```

```
70 DATA 250,208,25,160,1,165,251,162,253,1
  42,185,2,162,1,32,119,255,200,165,252
75 DATA 162,1,32,119,255,238,209,12,230,25
  0,172,208,12,230,251,208,2,230,252
80 DATA 192,255,240,3,76,104,12,200,240,24
  0
85 :
90 DIMA$(145):SYS3072:RREG,N
95 FORI=1TON:PRINTA$(I):NEXT
```

As with the C-64 version, the array that stores the directory must be the first array dimensioned. In my demo, A\$(0) contains the disk name, with the filenames starting in A\$(1). The number of filenames is passed to Basic with the RREG,N command. Be sure to use a comma before the variable.

—JON R. CURTIS, CENTRAL POINT, OR

\$43D A BETTER FILENAME

Here's a time-saver that will simplify your disk loads. When you save your files, add a prefix of two characters and a shifted space to the beginning of the filename, keeping the prefix plus filename within the usual 16-character limit.

Here's an example. Save the RUN Script boot program to disk with "WP<shifted space>RUNSCRIPT 128". It will appear as "WP"RUNSCRIPT 128 in the directory. As far as the disk is concerned, the file is named WP and can be loaded with LOAD "WP",8. Try it with several programs.

—ERIC PEDERSEN, APO, NY ▶

TRICK OF THE MONTH

\$43E C-64 BSAVE COMMAND

I frequently need to save parts of memory on the C-64, so I wrote the program below to add a BSave-type command to the 64.

```
5 REM MEMORY SAVER-HAZEM JAUNI
10 REM SYNTAX=!"NAME",START ADR,END ADR+1
15 FOR N=51200TO51330:READQ:POKE N,Q:C=C
  +Q
20 NEXT:IFC<>16574THENPRINT"ERROR!":END
25 DATA 120,169,13,160,200,141,8,3,140,
  9,3,88,96,120,160,1,177,122,201,33
30 DATA 208,77,32,115,0,32,115,0,201,34
  ,208,67,160,1,177,122,240,61,201,34
35 DATA 240,12,201,44,240,53,153,239,20
  0,200,192,17,208,236,152,56,101,122
40 DATA 133,122,169,0,101,123,133,123,1
```

```
36,152,162,240,160,200,32,189,255
45 DATA 169,2,162,8,160,1,32,186,255,32
  ,253,174,32,103,200,169,250,32,216
50 DATA 255,88,76,174,167,88,76,228,167
  ,32,138,173,32,247,183,32,253,174
55 DATA 165,20,133,250,165,21,133,251,3
  2,138,173,32,247,183,166,20,164,21
60 SYS51200:NEW : DATA 96
```

If you want to use this routine to save memory to tape, add the following line to the listing:

```
25 POKE 51278,1
```

The syntax for the new command is !<filename>,<start address>,<end address>+1.

—HAZEM JAUNI, E. JERUSALEM, ISRAEL

\$43F VARIABLE TABS FOR ANY PRINTER

Tabs don't print out in hard copy the same way they appear on the screen. The following program will show how to align columns at the right or the left to get the tabs to print out right. It will work with any printer and computer.

```
10 REM PRINTER COLUMNS-GEORGE VOGLER
20 OPEN4,4:H=20:REM COL WIDTH
30 FORI=1TO8:READ DA$:HT=H-LEN(DA$)
40 PRINT#4,SPC(HT)DA$SPC(H)DA$SPC(HT)". "
50 NEXT:PRINT#4:CLOSE4
60 DATA 2,100,2002,393939,55,5335,8,4321
```

The program prints four columns of data. The first column is left-justified, the second is blank, the third is right-justified, with the cursor ready for the fourth. The fourth column contains just a period to show that it's properly aligned.

—GEORGE W. VOLGER, HOUSTON, TX

\$440 64 INPUT WITH SOUND

This Get routine disables the cursor keys and other non-printing keys and produces a soft beeping sound as each character is typed in.

```
90 REM INPUT WITH SOUND EFFECTS-JOSEPH R.
  CHARNETSKI
100 R=54272:FORJ=RTOR+23:POKEJ,0:NEXT
110 POKER+5,28:POKER+24,15:PRINT" {SHFT CLR
  }
120 PRINT"[PROMPT HERE] ";
130 PRINT"{CTRL 9} {CRSR LF}{CTRL 0}";
140 GETA$:IFA$=""GOTO140
150 IFA$=CHR$(13)THENPOKER+1,32:POKER+4,21
  :PRINT" ":POKER+4,20:GOTO220
160 IFA$=CHR$(20)ANDLEN(C$)THENC$=LEFT$(C$,
  LEN(C$)-1):GOTO190
170 IFA$<CHR$(32)ORA$>CHR$(127)ANDA$<CHR$(
  160)GOTO140
180 C$=C$+A$
190 POKER+1,28:POKER+4,17:PRINTA$;
200 IFA$=CHR$(34)THENPOKE212,0
210 POKER+4,16:GOTO130
220 REM CONTINUE HERE...
```

—JOSEPH R. CHARNETSKI, DALLAS, PA

\$441 PROTECT YOUR ML

Commodore 128 programmers who use the Graphic1: Graphic5 commands to relocate the start of Basic to \$4000 to open up a large area in shared RAM (\$1300-\$3FFF) may be placing their programs in jeopardy!

Here's why: The Graphic5 command doesn't clear location \$D8 as Graphic0 does. \$D8 must be cleared to send text to the current screen, using the CHAR command, rather than to the bit-mapped screen where your code is stored. If the byte isn't cleared, CHAR will print the text over your ML code!

Always issue a Graphic0 command prior to Graphic5, or store a 0 in location \$D8 (216 decimal).

—BOB KODADEK, ASTON, PA

\$442 CUSTOMIZER PROGRAM

Here's a program I use to automatically customize my C-128 in either C-128 or C-64 mode. It will also load a menu

program for you, remind you what computer you're using when you're in 40-Column mode and display the function keys at the bottom of the 128 screen. (You should change these to match your own definitions.) If you use a C-64 only, eliminate the If statement at the end of line 40. You don't need to enter lines 90-140.

```
10 REM C-64/128 CUSTOMIZER-BOB KNIBB
20 M$="DO YOU WISH TO SEE A MENU (Y/N) {CT
  RL 0}?"
30 POKE53280,0:POKE53281,0:PRINTCHR$(142)"
  {2 HOMES}{SHFT CLR}";
40 FORS=55333TO55335:POKE5,1:NEXT:IF FRE(0)
  <>FRE(1)THEN90
50 POKE646,7:POKE1062,54:POKE1063,52:PRINT
  "{CRSR DN}"M$;
60 GETA$:IFA$=""THEN60
70 PRINT"{CRSR LF}"A$:IFA$="N"THEN NEW
80 POKE46,PEEK(44)+8:CLR:LOAD"MENU64",8
90 KEY1,"DATA ":KEY4,"PRINT":KEY8,"RENUMBE
  R"+CHR$(13):COLOR5,15:POKE235,22
100 IFPEEK(215)THENFAST:COLOR6,1:PRINT:L=4
  :GOSUB130:WINDOW0,0,79,23:GOTO120
110 POKE1061,49:POKE1062,50:POKE1063,56:GO
  SUB130:GOSUB130:WINDOW0,1,39,22
120 COLOR4,8:PRINTM$:GETKEY$:PRINT" {SHFT
  CLR}":IFA$="Y"THENRUN"MENU128":ELSE NE
  W
130 PRINT:FORI=1TOL+4:READF$,K$:PRINT" {CTR
  L 9}"F$"{CTRL 0}"K$"{2 SPACES}";:NEXT
  :RETURN
140 DATA F1,DATA,F2,LOAD,F3,DIREC,F4,PRINT
  ,F5,SAVE,F6,RUN ,F7,LIST ,F8,RENUM
```

—BOB KNIBB, WALKERSVILLE, MD

\$443 ML MEMORY TRANSFER

Transferring large blocks of memory on the C-64 sometimes seems to take an eternity. Machine language routines can transfer them quickly, but why reinvent the wheel? Use the built-in Basic ROM routine at \$A3EC (41964). This routine will copy the character set (2K of memory), for example, in less than a second.

You must provide a starting and ending address for the area to be copied and a new starting address to copy it to. These addresses are entered in lines 50 and 80 of the program below. This program demonstrates the transfer command by copying the character set (uppercase/graphics only), and it customizes the character set with an underlined cursor. The subroutine at line 120 calculates the addresses required and does the actual transfer.

```
10 REM MEMORY XFER-ROBERT B COOK
20 REM -XFER CHAR ROM-
30 POKE52,56:POKE55,0:POKE56,56:CLR
40 POKE56334,0:POKE1,51
50 SA=53248:EA=55296:NS=14336:GOSUB120
60 POKE1,55:POKE56334,1:POKE53272,30
70 REM -REV TO U.LINE-
80 SA=14336:EA=15359:NS=15360:GOSUB120
90 FORI=15367TO16390STEP8:POKEI,255:NEXT
100 END
110 REM -TRANSFER MEMORY SUB-
120 EA=EA+1:L=EA-SA:NE=L+NS
```


MAGIC

```

130 X=INT(L/256):Y=L-256*X
140 A=INT((NE-Y)/256):B=NE-256*A-Y
150 C=INT((EA-Y)/256):D=EA-256*C-Y
160 POKE781,X+1:POKE782,Y
170 POKE88,B+1:POKE89,A
180 POKE90,D+1:POKE91,C
190 SYS41964:RETURN

```

—ROBERT B. COOK, BRAINTREE, MA

\$444 LO-RES DRAW PROGRAM

My program lets you make simple drawings on the C-64's 40-column screen, and it's easy enough for a child to use. Use a joystick in port 2 to control the cursor. The fire-button, or any key except home, changes the colors. Change the color to black to erase the drawing. Use the home key to clear the screen and start a new picture.

```

10 REM LO-RES DRAW - ADAM MILLER
20 POKE53281,0:POKE53280,0:C=1:X=0:Y=0:PRINT "{SHFT CLR}"
30 J=PEEK(56320):F=JAND16:J=15-(JAND15):IF J=1ORJ=5ORJ=9THENY=Y-1
40 IFJ=2ORJ=6ORJ=10THENY=Y+1
50 IFJ=4ORJ=8ORJ=12THENX=X-1
60 IFJ=3ORJ=7ORJ=11THENX=X+1

```

```

70 GETA$:IFA$=""OR F=0 THENC=C+1:IFC=16THENC=0:FORJ=1TO200:NEXT
80 IFA$="{HOME}"GOTO20
90 IFX>39THENX=0
100 IFY>24THENY=0
110 IFX<0THENX=39
120 IFY<0THENY=24
130 POKE1024+X+40*Y,81:POKE55296+X+40*Y,C
140 GOTO30

```

—ADAM MILLER, BRANDON, SD

\$445 C-128 SPRITE REDUCTION

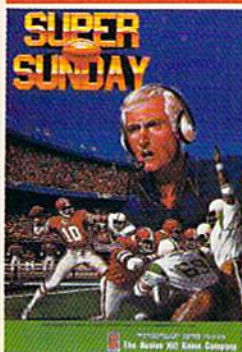
The following program produces seven consecutive reductions of any sprite you design, to give the illusion that the object is moving away. The program will ask for the sprite number of the sprite you want to reduce. Be sure that any other sprites are saved, since the new ones will be stored in the sprite area. After the reduction is complete, the sprites will be displayed on the screen for you to view.

```

10 REM SPRITE REDUCER-MARCO HAGELSIEB
20 INPUT "{SHFT CLR} {4 CRSR DNs} SPRITE NUMBER (1-8)";SN:IFSN<1ORSN>8THEN20
30 COLOR 0,7:COLOR4,7:COLOR1,8:GRAPHIC1,1:

```

Continued on p. 120.



BIG LEAGUE SPORTS

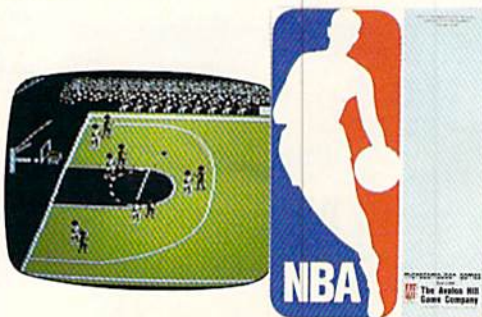
SUPER SUNDAY—Armchair quarterbacks the world over have made SUPER SUNDAY the best selling computer football game. This we attribute to the right blend of graphics, game play and especially statistics, because that's what sets Avalon Hill sports games from the pack. The vicarious experience of coaching real-life players, second guessing your computer or human opponent and the feeling of BEING THERE will send you back to SUPER SUNDAY over and over again. Support of the game system also makes it distinct. You can get the entire '84, '85 or '86 season disks with rosters and stats for all the big league team starters and interchange teams of the past and present. The all new General Manager's Disk (also available separately) allows you to create "dream teams" in setting up your own Pro Football draft. Available for Apple® II, C® 64/128, IBM® PC for \$35.00.

NBA—We have taken the same concept as SUPER SUNDAY from the field and put you down on the court in NBA, the definitive pro basketball game. Licensed by The National Basketball Association, NBA gives you the same flexibility, visuals and real-life player stats so you can coach the Celtics dynasty, Kareem, Magic and the Lakers or eighteen other great pro B-Ball teams. Available for Apple® II and C® 64/128 for \$39.95; IBM® coming soon.

STATIS PRO BASEBALL—It's funny that America's favorite sports pastime has not been our best selling computer sports game. Maybe it's because you haven't known about it 'til now. COMPUTER STATIS PRO BASEBALL (based on our best-selling board game) has elicited countless letters of praise from computer baseball fanatics and stat buffs alike. Although it lacks the graphic flair of SUPER SUNDAY and NBA, it's a dandy of a stat baseball game ... and offers more game utilities right on the Master Game disk than any others—such as DESIGN YOUR OWN TEAMS, STAT COMPILER and DRAFT YOUR OWN TEAMS functions. Also, we offer ten past season disks. Available for Apple® II and C® 64/128 for \$35.00.

Look for our games wherever good software is sold, or call direct for ordering information ... AVALON HILL, the first name in sports and strategy games!

Dial 1-800-638-9292. Ask for Operator R11.



microcomputer games DIVISION



**The Avalon Hill
Game Company**

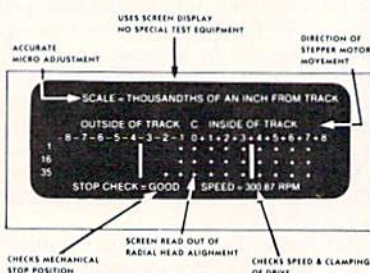
A MONARCH AVALON, INC. COMPANY

4517 Harford Road ★ Baltimore, MD 21214

"I Saved Time & Money with Physical Exam"

I use a data base to keep records for our club. Last week I experienced read errors. Luckily I have a 1541 Physical Exam program. The alignment test confirmed what I had suspected, my drive was out of alignment. I am happy to report that I aligned my drive MYSELF. I avoided the wait for repair and paid a fraction of the cost.

1541 Physical Exam Sample Screen



Package includes: • True digital alignment disk with offset tracks. • Mechanical Stop Test • Speed Test • Illustrated manual with instructions for performing alignment, adjusting speed and stop position. • Hard copy mode to print test results for future reference.

\$39.95 + S & H per program Please specify drive
1541, 1571, 8050, 8250, 4040, SFD 1001

Order Toll Free
10-6 MON-SAT

800-762-5645



Cardinal Software
14840 Build America Dr.
Woodbridge, VA 22191
Info: (703) 491-6494

Circle 192 on Reader Service card.

MAGIC

From p. 15.

```
ES=1:SPRSAY SN,A$:G$SHAPE A$,20,20
40 CHAR 1,9,13,CHR$(14)+"{SHFT W}ORKING...
   {SHFT P}LEASE {SHFT W}AIT"
50 FOR I=1TO7:ES=ES-.1:EY=ES+.06:PX=1:PY=1

60 FOR XX=0TO24:FORYY=0TO21
70 LOCATE XX+20,YY+20:IFRDOT(2)<>0THEN GOS
  UB 120
80 NEXTYY,XX,I:SPRSAY A$,1:PRINT "{SHFT CLR}
  "
90 FOR I=1TO7:SSHAPE B$(I+1),I*25+21,50,I*
  25+43,71:NEXT:GRAPHIC0
100 FOR I=1TO8:SPRITE I,1,1,1:MOVSPR I,50+
  30*I,115:SPRSAY B$(I),I
110 NEXT:END
120 X1=((I*25)+((XX*ES)+(12-(12*ES))))+20:
  Y1=50+((YY*EY)+(10-(10*EY)))
130 DRAW 1,X1,Y1:RETURN
```

—MARCO HAGELSIEB, GUADALAJARA, JALISCO, MEXICO

\$446 MAGIC 80-COLUMN CURSOR

Unlike on the C-64, it's easy to program a blinking cursor on your C-128's 80-column screen. You need only turn the 8563 video display chip's Cursor mode on, then off when you're done.

To turn it on, enter BANK15:SYS49182,70. This prints an escape/F through the escape character routine at \$C01E. The accumulator contains the value for the character F. Use SYS 52684,16,10 to turn the Cursor mode off. This writes to register 10 in the 8563 by calling the screen editor routine at \$CDCC in bank 15. The X register must contain the value for the 8563's register, while the accumulator holds the data you wish to write (in this case, 16). The demo program below shows how to put the magic cursor to work in your own programs.

```
10 REM MAGIC CURSOR DEMO-BOB KODADEK
20 IFPEEK(215)=0THENPRINT"80 COL ONLY!":EN
  D
30 PRINT:PRINT"1. VIEW DIRECTORY"
40 PRINT"2. LIST PROGRAM"
50 PRINT"3. QUIT DEMO":PRINT
60 PRINT"ENTER CHOICE: ";
70 BANK 15:SYS49182,70:REM CURSOR ON
80 GETKEY A$:K=VAL(A$):IFK<1OR K>3THEN80
90 PRINT A$:SYS52684,16,10:REM CURSOR OFF
100 ON K GOSUB 120,130,140
110 IF K<>3THEN30:ELSE END
120 CATALOG:RETURN
130 LIST:RETURN
140 PRINT"ALL DONE!":RETURN
```

—BOB KODADEK, ASTON, PA

\$447 80-COLUMN TOGGLER

Use this simple ML program to toggle between two 80-column screens. Type in the listing below and run it for a brief demo. Note that you should always clear the second screen the first time it's accessed. One warning: If you have

INTRODUCING

MASTER-41



\$159

1541 COMPATIBLE DISK DRIVE

TO ORDER CALL TOLL FREE

1-800-544-6274

We guarantee your satisfaction!



**NORTH AMERICAN
PRODUCTS
INTERNATIONAL**

5892 MAIN STREET / SPRINGFIELD, OR 97478 / 503-741-1222

MAGIC

any bank-switching in your program, remember that my routine will always exit in bank 15.

```
10 REM TOGGLER 80-EDWARD B SULLIVAN
20 PA=4864:FORX=PATOPA+51:READE:POKEX,E:C=
  C+E:NEXT
30 IFC<>5611THENPRINT"ERROR!":STOP
40 DATA 169,0,141,0,255,162,12,32,204,205,
  141,46,10,169,8,162,20,32,204,205
50 DATA 141,47,10,96,234,169,0,141,0,255,1
  69,16,162,12,32,204,205,141,46,10
60 DATA 169,24,162,20,32,204,205,141,47,10
  ,96,234
70 S1=PA:S2=PA+25: REM ** DEMO
80 PRINT"{SHFT CLR}":KEY1,"SYS"+STR$(S1)+C
  HR$(13):KEY2,"SYS"+STR$(S2)+CHR$(13)
90 DIRECTORY:PRINT"SCREEN #1 IS THE DEFAULT
  T SCREEN":GETKEYA$
100 SYS S2:PRINT"{SHFT CLR}ALWAYS CLEAR SC
  REEN # 2 THE FIRST TIME ACCESSED":LIST
  :GETKEYA$
110 SYSS1:GETKEYA$:SYSS2:GETKEYA$:GOTO110
  —EDWARD B. SULLIVAN, BRANSON, MO
```

\$448 C-64 METRONOME

Here's a program that will transform your C-64 into an instrument for marking time. The program produces an animated screen display with a metronome-like sound and runs until you press any key.

```
10 PRINT"{SHFT CLR}C-64 METRONOME - JOSEPH
  R. CHARNETSKI"
20 INPUT "{CRSR DN}BEATS PER MINUTE (40-200)";N
30 IFN<40 OR N>200THEN END
40 FORI=1TO9
50 B$=B$+"{SHFT M}{CRSR DN}":C$=C$+"{CRSR
  UP}"
60 D$=D$+"{CRSR DN}":E$=E$+"{CRSR UP}{SHF
  T N}"
70 NEXT
80 H$="{HOME}{9 CRSR DNs}{10 CRSR RTs}"
90 A$(0)=H$+B$+"*"+C$:A$(1)=H$+D$+"*"+E$
100 S=54272:FORJ=STOS+23:POKEJ,0:NEXT
110 POKES+1,84:POKES+6,9:POKES+24,15
120 Y=1:Z=INT(1299/N*45-N/2)
130 PRINT A$(XANDY):POKES+4,21
140 FOR T=1TOZ:NEXT:POKES+4,20
150 GETK$:IFK$=""THEN X=Y-X:GOTO130
160 PRINT"{SHFT CLR}":POKES+24,0
```

—JOSEPH R. CHARNETSKI, DALLAS, PA

\$449 C-128 THREE-POINTER

My program will show football fans a perfect field goal every time, on their C-128!

```
10 PRINT"{SHFT CLR}FIELD GOAL BY MICHAEL B
  LACKMON":FORG=3584TO3839:POKEG,..:NEXT
20 FORX=1TO4:READS,A:FORG=S TO A:READP:POK
  EG,P:NEXT:NEXT
30 COLOR0,6:SPRCOLOR3,7:GRAPHIC3,1:COLOR1,
  8:COLOR2,2:WIDTH1
```

THE AMAZING VOICE MASTER®

**SPEECH
DIGITIZER,
VOICE
RECOGNITION
AND MORE...**



There is nothing else like it. Voice Master gives both speech output and voice recognition with this single hardware product! Your voice controls programs, or home appliances, robots, and more with spoken commands. Verbal response back gives status, verifies, or requests your reply! Speech output and recognition patterns are recorded into memory with your voice. Programming is simple with new commands added to BASIC. Demo programs get you up and running quickly. A music bonus program lets you write and compose musical scores merely by humming a tune. Unlimited applications for fun, education, or commercial use. Design your own programs for profit. Speech and recognition quality the finest available. Only Covox provides this high-tech marvel for unlimited applications at a very affordable price.

The Covox Voice Master comes complete with all hardware and software for only \$89.95. 30 day satisfaction guarantee. One year warranty. (Add \$4 shipping and handling for USA, \$6 Canada, \$10 overseas.) Available for Commodore 64/128, Apple II, II+, IIc, IIe, Atari 800, 800XL, 130 XE (IBM PC and compatibles version available soon). Specify when ordering. Visa, MasterCard phone orders accepted.



Call or write today for FREE
Covox product catalog and newsletter

COVOX INC.

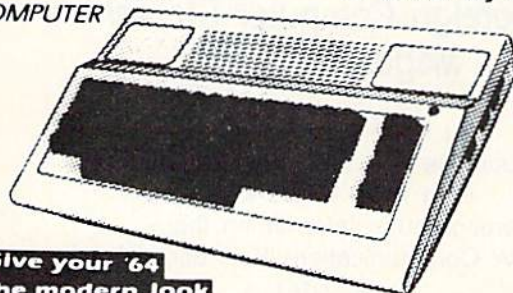
675-D Conger Street • Eugene, Oregon 97402 • U.S.A.
Area Code (503) 342-1271 • Telex 706017 (Av Alarm UD)

Circle 300 on Reader Service card.

Slimline'64Case

A NEW IMAGE FOR
THAT FAVOURITE
COMPUTER

- Easy to Fit
- Lower key height



Give your '64
the modern look

Now you can have that sleek new look without buying a new computer. Our replacement case will give your '64 the modern look and color you have been wanting. Installation takes just 10 minutes and requires only a Phillips screwdriver. So don't be stuck with the old look when the Slimline is here and ready for immediate shipping.

Our price of \$34.95 includes handling charges. Certified checks or postal money orders will be shipped on receipt. Personal checks must be held for 4 weeks pending bank clearance. Sorry, no COD's. Charge cards can order by calling (902) 892-6372.

GDP
Grapevine Data Products

PO BOX 1886
Charlottetown PEI
Canada C1A 7N5

Circle 130 on Reader Service card.

NOVEMBER 1987 • RUN 121

1541/1571 Drive Alignment

1541/1571 Drive Alignment reports the alignment condition of the disk drive as you perform adjustments. On screen help is available while the program is running. Includes features for speed adjustment and stop adjustment. Complete instruction manual on aligning both 1541 and 1571 drives. Even includes instructions on how to load alignment program when nothing else will load! Works on the C64, SX64, C128 in 64 or 128 mode, 1541, 1571 in either 1541 or 1571 mode! Autoboots to all modes. Second disk drive fully supported. Program disk, calibration disk and instruction manual only \$34.95!

Super Disk Utilities

Super Disk Utilities is the ultimate utilities disk for the 1571 disk drive and C128 computer. An 80 column monitor is required. SDU will copy whole disks (with 1 or 2 drives), perform many CP/M and MS-DOS utility functions, edit any track or sector, trace files, copy files, rename a disk, rename a file, change disk format (without affecting data), scratch or unscratch files, lock or unlock files, erase a track or a whole disk, create auto-boot, assemble/disassemble drive RAM or ROM, analyze disk format, format in MFM, CPM+, 1541, or 1571 format, reads CPM+ directories, contains a 1571 drive monitor, fully supports a second 1571 drive, performs direct DOS commands and much, much more! Options window displays all choices available at any given time. Many utilities also work on the 1541 drive. No need for numerous utility disks! SDU does it all! Only \$39.95!

Free shipping & handling! No surcharge for credit card orders! Immediate shipping! Illinois residents add 8% sales tax. Order from:

Free Spirit Software, Inc.

538 S. Edgewood

La Grange, IL 60525

(312) 352-7323



Circle 144 on Reader Service card.

Attention Foreign Computer Stores/ Magazine Dealers

You have a large technical audience that speaks English and is in need of the kind of microcomputer information that CW Communications/Peterborough provides.

Provide your audience with the magazines they need and make money at the same time. For details on selling AmigaWorld, RUN, 80 MICRO, CD-ROM Review, PC Resource and inCider contact:

Marjorie Rubin
Boarts International
747 3rd Avenue
New York, NY 10017
Phone: (212) 688-2778

MAGIC

```
40 DRAW2,0,120TO280,120:FORG=0TO6:DRAW1,G*
  20,120TO+40,199:NEXT:COLOR1,10
50 DRAW1,150,140TO150,160:DRAW1,145,120TO1
  45,135TO155,145TO155,130:SPRSV1,A$
60 SPRITE1,1,2,,,1:SPRITE4,1,10:MOVSPR1,2
  0,180:MOVSPR4,95,180:MOVSPR1,90#1
70 FORG=1TO6:GOSUB100:SPRSV2,1:GOSUB100:S
  PRSAVA$,1:NEXT:MOVSPR1,90#0:SPRSV3,1
80 FORX=45TO135STEP15:MOVSPR4,X#2:FORZ=1TO
  265:NEXTZ,X:SLEEP2:GRAPHIC0
90 SPRITE1,0:SPRITE4,0:MOVSPR4,0#0:END
100 FORX=1TO100:NEXT:RETURN
110 DATA3597,3645,20,,,20,,,21,,,20,,,16,,
  ,168,,,170,,,2,42,,,2,40,128,2,40,128
120 DATA,20,,,60,,,252,,,252,,,204,,,204,,
  ,255,3661,3710,20,,,20,,,21,,,20,,,16
130 DATA0,104,,,170,,,2,42,,,2,40,128,2,40,
  128,20,,,63,,,51,,,51,,,51,,,51,,,63
140 DATA192,3725,3773,20,0,0,20,0,0,21,32,
  ,20,128,16,128,170,48,168,48,2,40
150 DATA240,2,40,192,2,43,192,23,,,63,,,6
  0,,,12,,,12,,,12,,,15,3825,3837,32
160 DATA0,,,112,,,112,,,112,,,32
```

—MICHAEL BLACKMON, PALESTINE, TX

\$44A SIMPLE C-64 PIANO

I programmed this short top-row keyboard piano for quick key response. I find it nice to play simple tunes on. The number row is for sharps and flats, and the second row is for regular notes.

```
10 REM 64 PIANO-ANDREW SENFT
20 S=54272:FORZ=STOS+27:POKEZ,0:NEXT:POKES
  +24,15:POKES+6,127:POKES+4,35
30 F%=1145:DATA62,59,9,8,14,17,16,22,19,25
  ,24,30,33,32,38,35,41,46,43,49,48,54
40 FORZ=0TO127:POKE49152+Z,0:NEXT:FORZ=1TO
  22:READK%:T%=2{UP ARROW}{1/12}*F%+.5
50 F%=T%:POKE49152+K%,T%/256:POKE49216+K%,
  (T%/256-PEEK(49152+K%))*256:NEXT
60 DATA 166,197,189,0,192,201,0,240,247,14
  1,1,212,189,64,192,141
70 DATA 0,212,228,197,240,252,169,0,141,1,
  212,141,0,212,76,128,192,0
80 FORZ=0TO32:READA%:POKE49280+Z,A%:NEXT
90 PRINT"{2 CRSR DNs}SIMPLE PIANO BY ANDRE
  W SENFT":SYS49280
```

—ANDREW SENFT, AUBURN, NY

\$44B REFLECTIONS ON THE C-128

This program lets you create some interesting graphics displays by creating "reflections" of your drawings. Use a joystick in port 1 to draw by moving the cursor around the hi-res screen. Draw in the lower-left corner, so the cursor directions will seem correct. The display will be reflected four times around the screen. Clear the screen with the fire-button.

```
10 REM REFLECTIONS - JON ALLEN
20 SLOW:GRAPHIC1,1:COLOR0,1:COLOR1,8
```


MAGIC

```

30 COLOR4,1:SCALE1:X=750:Y=250
40 J=JOY(1):IFJ=128THENSCLNR
50 IFJ=1ORJ=2ORJ=8THENY=Y+10
60 IFJ=6ORJ=5ORJ=4THENY=Y-10
70 IFJ=8ORJ=7ORJ=6THENX=X-10
80 IFJ=2ORJ=3ORJ=4THENX=X+10
90 IFX<0THENX=0
100 IFX<0THENX=0
110 IFY<0THENY=0
120 IFX>1000THENX=1000
130 IFY>1000THENY=1000
140 DRAW1,X,Y:DRAW1,1000-X,Y
150 DRAW1,X,1000-Y:DRAW1,1000-X,1000-Y
160 GETAS:IFAS="{LB.}"THENGGRAPHIC0:PRINT{"
CTRL 2"}:END
170 GOTO40

```

—JON ALLEN, NEWFANE, NY

\$44C BASIC SCRAMBLER

Sometimes a need for program security arises, and my Basic Scrambler program offers some measure of protection. To use it, just load it and run it to poke the machine language into memory. Then load the program you want to protect and enter SYS49152,<code1>,<code2>. The codes can be any two different numbers from 0 to 255 (for example, SYS49152,10,20).

After a program is scrambled, save it to disk. It can be loaded as usual, but when you list it, only garbage will be printed to the screen. To unscramble the program, follow the same procedure used to scramble it, using the same codes.

```

5 REM 64 BASIC SCRAMBLER - RICHARD PENN
10 FORU=49152TO49346:READQ:POKEU,Q:C=C+Q:N
EXT
15 IFC<>26195THENPRINT"CHECK DATA!":STOP
20 POKE50000,0:POKE50001,0:POKE770,164:POK
E771,192
25 PRINT"{SHFT CLR}{CRSR DN}BASIC SCRAMBLE
R ENABLED":PRINT"{CRSR DN}SYS 49152, [0
-255], [0-255] - TO USE"
30 DATA 32,241,183,142,82,195,32,241,183,1
42,83,195,165,43,133,251,165,44
35 DATA 133,252,160,0,32,38,192,177,251,77
,82,195,77,83,195,145,251,76
40 DATA 22,192,165,251,197,45,208,6,165,25
2,197,46,240,12,230,251,165,251
45 DATA 201,0,240,1,96,230,252,96,152,145,
251,32,50,192,145,251,32,50
50 DATA 192,145,251,165,43,133,251,165,44,
133,252,32,50,192,32,50,192,32
55 DATA 50,192,32,50,192,177,251,201,0,208
,247,32,50,192,165,252,72,165
60 DATA 251,72,165,43,133,251,165,44,133,2
52,104,145,251,32,50,192,104,145
65 DATA 251,76,123,227,215,72,152,72,8,160
,0,177,187,201,36,240,14,165
70 DATA 44,141,80,195,169,255,133,44,169,1
,141,81,195,40,104,168,104,76
75 DATA 165,244,169,131,141,48,3,169,192,1
41,49,3,173,81,195,201,1,208

```



PROF JONES

SUMMER/FALL 1987

PROFESSIONAL HANDICAPPING SYSTEMS

PROFESSIONAL SERIES™

PROFESSIONAL HANDICAPPING TOOLS FROM PROF. JONES, The New PROFESSIONAL SERIES™ "Software for the Serious Handicapper"



Thoroughbred



Greyhound



Trotter/Pacer

- **Mini-Pro Analysis™** \$149.95
Complete race analysis for the sophisticated handicapper with single screen input, holding tanks to check entries, powerful use of 30 variables in data manipulation, complete "HELP" functions, and more.
- **Analysis Module™** \$249.95
Our comprehensive, full featured package contains Mini-Pro Analysis plus betting analyses, money managers, post position adjusters, fractional adjusters, multi-track abilities, watch lists, and on-screen betting philosophy.
- **Multiple Regression Module™** \$149.95
Using linear regression, this module regresses out factors relating to winning animals and then automatically recalculates the weighting formula as successive races are analyzed to derive the most precise formula possible, dramatically increasing win percentage!

NEW for 1987



BELL CURVE ANALYSIS



CLUSTER ANALYSIS

PROFESSIONAL LOTTERY/LOTTO™ \$149.95
Cutting edge analyses for the serious professional. Contains Bell Curve, Central Tendency, Cluster Analysis, and 17 Dinitro Systems, for complete, high accuracy analysis of Lottery or Lotto.



Cumulative Stats
Last 4 weeks
Last 2 weeks
Previous Weeks?

Power Plays
(40ers)
Rams
(Bears)
(Vikings)
Seahawks

PROFESSIONAL SERIES FOOTBALL™ \$199.95
A flexible, high performance football analysis with complete built-in scheduling, excellent file capacity, single input for two teams, and high accuracy; contains predictors for team scores, over/under, non-bets, regular bets and superbets. The regression analysis is adjustable to give results based on any number of previous weeks.

BOOKIE BUSTER™ FOOTBALL ANALYSIS \$149.95
A high accuracy football analysis using 21 separate and structured analyses and a complete database of all NFL games from 1978 to 1986 to predict the spread winner.

Terms: Free shipping all software. Add \$6.00 COD / \$6.00 UPS Blue / \$9.00 International delivery / ID residents add 5%. Allow 3 weeks when paid by personal check. Prices above are for cash or money order only. Add 3% for Visa, MasterCard, and AMEX. Prices subject to change.

Many more programs available.
Call today for a copy of our **FREE CATALOG!**

Circle 74 on Reader Service card.

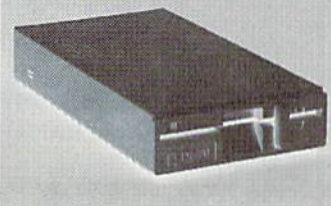


D540

1541 COMPATIBLE DISK DRIVE

GEOS, SUPERKIT, FAST HACK'EM COMPATIBLE

- EXTERNAL DEVICE NO SELECTION
- UTILITY PROGRAMS FOR FAST DISKETTE FORMAT



\$155

To Order
Call 1-800-521-9298
(in NJ, Dial 201-874-4072)
VISA, MASTERCARD or Money Order. Allow \$8.00 shipping & handling, and \$5.00 for credit card service. (NJ residents add \$9.30 tax). Send mail order with payment to:

H&M MARKETING

P.O. BOX 8339 SOMERVILLE, NJ 08876



V4.0

ULTRABYTE DISK NIBBLER

POWERFUL NEW GCR NIBBLER FOR COMMODORE 64 and 128 (in 64 mode)

- Automatically copies most disks in 2 minutes or less including variable density and rapid locked protection
- 105 new parameters to make unprotected copies of recent disks. Send stamped envelope for list
- Copies up to 40 tracks using 1 or 2 1541 or 1571 drives. Copies both sides on 1571
- Copies itself (for this reason, no refunds given)

**SPECIAL — BUY A NIBBLER V4.0 AND GET
YOUR CHOICE OF A FREE \$14.95 PROGRAM**

\$39.95 plus \$4.00 shipping

1. Disk Surgeon V2.0 -- new disk utility \$14.95
 2. Ultramail -- mail list and labels } both for
Handy-Capper -- race handicapper } \$14.95
 3. McMurphy's Mansion -- text adventure ... } both for
Soluware -- solutions to 10 adventures ... } \$14.95
- (Above may be ordered separately for \$14.95 plus \$4.00 shipping. Foreign orders add \$2.00)

Mastercard, Visa, Check or M.O., Calif. add 6.5% (\$2.60) sales tax. Foreign orders / COD add \$2.00. Payment must be in U.S. funds

UPDATES - Return original Ultrabyte disk with \$15.00 plus \$4.00 shipping. Foreign add \$2.00. No free disk with update

To order, write or call 24 hr. order line. For info, write.

ULTRABYTE (818) 796-0576

P.O. Box 789 LaCanada, CA 91011 USA

DEALERS & DISTRIBUTORS WANTED

Circle 132 on Reader Service card.



WORLD

EDITION

\$39.95

- An ENTERTAINING and EDUCATIONAL package for the entire family
- Browse through the world and learn a wealth of interesting facts and figures at your finger tips
- Extensive use of color graphics for superb visual displays
- Nearly 1 megabyte of textual data contained on 5 disks
- Requires Commodore 128, 1 disk drive, joy stick (color monitor recommended)

Send cash, check or money order to:

**California Computing Specialists
Dept. A**

5102 Neptune, Newport Beach, CA 92663

714-548-4144

Calif. residents add 6% sales tax

MAGIC

80 DATA 10,173,80,195,133,44,169,0,141,81,
195,76,131,164,80

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$44D DIRECTORY PRINTER

The following program reads each filename in a directory into an array and sorts the filenames alphabetically. You can then print out the directory in one- or two-column format with any Commodore computer and any printer.

```

1 REM DIRECTORY PRINTER-J.R.CHARNETSKI
2 PRINT"(SHFT CLR)WHEN READY PRESS RETURN"

3 GETA$:ON-(A$<>CHR$(13))GOTO3:PRINT"(SHFT
  CLR)WORKING..."
4 DIML$(146):OPEN1,8,0,"$0":GET#1,A$,B$
5 GET#1,A$,B$:IFB$=""THENCLOSE1:GOTO12
6 GET#1,A$,B$:N=N+1
7 LB=ASC(A$+CHR$(0)):HB=ASC(B$+CHR$(0))
8 C$=MID$(STR$(LB+256*HB),2)+" "
9 GET#1,D$:IFD$<>""THENC$=C$+D$:GOTO9
10 IFN>1THENL$=LEFT$(C$,27):GOTO5
11 L$(N)="$0{2 SPACES}"MID$(C$,4):GOTO5
12 FORI=2TON-2:FORJ=I+1TON-1
13 IFMID$(L$(I),7,16)>MID$(L$(J),7,16)THEN
  T$=L$(I):L$(I)=L$(J):L$(J)=T$
14 NEXTJ:NEXTI:X=INT(N/2):PRINT"(SHFT CLR)";

15 INPUT"(CTRL 9)1-2-PRINT 3-DISPLAY 4-END
  ":A:ONA+1GOTO15,16,17,:END
16 OPEN4,4:CMD4:IFA=2THEN18
17 FORI=1TON:PRINTL$(I):NEXT:GOTO20
18 FORI=1TOX:PRINTL$(I):NEXT:GOTO20
19 NEXT:IFN=XTHENPRINTSPC(34)L$(N)
20 ON-(A=3)GOTO15:PRINT#4:CLOSE4:GOTO15

```

—JOSEPH R. CHARNETSKI, DALLAS, PA ■

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting or more enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for C-128 mode only are not eligible for Trick of the Month.

If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

Software You Can Buy—Cheap!

New Disk Drive Alternative

RUN

THE COMMODORE 64/128 USER'S GUIDE

December 1987
AN IDGC/I Publication

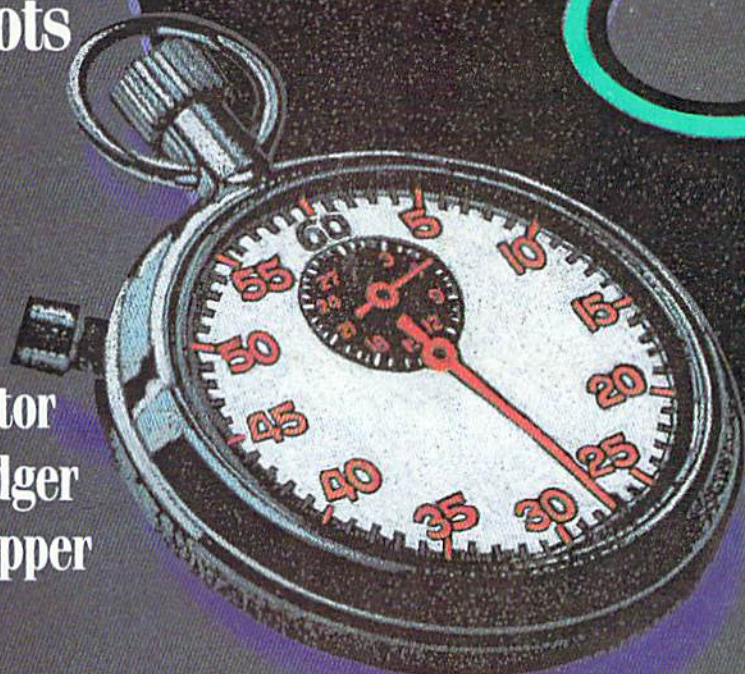
U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

Fantastic Fast-Load For Your 64

Trace Your
Family Roots

Plus:

- ▶ Brickout!
- ▶ RUN Investor
- ▶ Tenpin Ledger
- ▶ Smart Shopper



MAGIC

Play some holiday ditties; check your disks' write-protect status; add a fancy border to your screen displays; and more.

Compiled by JIM BORDEN

\$44E WHITE CHRISTMAS

This program plays a C-64 version of Irving Berlin's White Christmas and simultaneously produces a screen display that simulates falling snow.

```
10 REM WHITE CHRISTMAS-J.R.CHARNETSKI
20 POKE53280,5:POKE53281,0:PRINT"{SHIFT CLR
}{CTRL 2}"
30 S=54272:FORI=STOS+23:POKEI,0:NEXT
40 POKES+24,15:POKES+5,9:POKES+6,9:FORJ=1T
O68:READHF,DU:CS=CS+HF+DU:POKES+1,HF
50 POKES+4,17:FORE=0TO28*(DU+1)
60 IFD=XTHENPRINT"{HOME}{CURSOR DN}";SPC(RND
(1)*38+1);".{HOME}{CURSOR DN}{CURSOR LF}"CH
R$(148):POKE218,156:X=X+10
70 NEXT:POKES+4,16:X=0:NEXT:POKES+24,0
80 IFCS<>6422THENPRINT"DATA ERROR":END
90 PRINT"{SHIFT CLR}MERRY CHRISTMAS!!!"
100 DATA 84,3,89,,84,,79,,84,,89,3,94,
110 DATA 100,3,112,,126,,134,,150,,134,
120 DATA 126,,112,,100,5,67,,75,,84,1
130 DATA 84,1,84,,112,1,100,,67,1,67,1
140 DATA 67,,100,1,89,,84,2,84,,89,,84,
150 DATA 75,,67,,75,5,84,3,89,,84,,79,
160 DATA 84,,89,3,94,,100,2,112,,126,
170 DATA 134,,150,,134,,126,,112,,100
180 DATA 5,67,,75,,84,1,84,1,84,,112,1
```

```
190 DATA 100,,134,5,67,,75,,84,1,84,1
200 DATA 112,,63,,63,1,63,,67,5
```

—JOSEPH R. CHARNETSKI, DALLAS, PA

\$44F JINGLE BELLS

My program plays a lively C-64 version of this song by J. S. Pierpont.

```
1 REM C-64 JINGLE BELLS-J.R.CHARNETSKI
2 A$="GGGGGGGO>BGIIIIIGGGGBBBOGGGGGGGO>BG
IIIIIGGGGOIB>6GB>666GB>99IGB<OOIBG6G"
3 B$="B>666GB>99IGBOOOOUIB>OGGGGGGO>BGII
IIIGGGGBBBOGGGGGGGO>BGIIIIIGGGGOIB>"
4 C$="BBDBBDBBCAHHBBCABBCABBBBDBBDBBDBCAH
BBCABBCABBBBHHBBBGBABBBBHHBBBHHBBBHH"
5 D$="BBGABBBBHHBBBBCABBBBDBBDBBDBBDBCAHBB
CABBCABBBBDBBDBBDBBDBCAHBBBCABBCABBBBH"
6 A$=A$+B$:D$=C$+D$:W=54272:FORI=WTOW+23:P
OKEI,0:NEXT:POKEW+5,9:POKEW+24,15
7 FORI=1TO144:POKEW+1,ASC(MID$(A$,I,1))-29
:POKEW+4,33
8 FORJ=1TO100*(ASC(MID$(D$,I,1))-64):NEXT:
POKEW+4,32:NEXT:POKEW+24,0
```

—JOSEPH R. CHARNETSKI, DALLAS, PA ▶

TRICK OF THE MONTH

\$450 C-64 EASY PRINTER CONTROL

My program adds two new commands to the Basic vocabulary to help make your printer obey your computer.

The first command is *P, which directs all output from the screen to the printer. It's equivalent to OPEN4,4,0:CMD4.

The second command is *S, which redirects the output back to the screen. It's equivalent to PRINT#4:CLOSE4. The device number is the second 4 in line 80 and the secondary address is the 0 in line 80. These numbers can be changed as required (along with the checksum value in line 20).

```
0 REM OUTPUT CONTROL-GEOFFREY KERCHNER
10 C=0:FORA=49152TO49233:READB:POKEA,B:C=C
+B:NEXT
```

```
20 IFC<>9125THENPRINT"DATA ERR.":END
30 SYS49152:PRINT"NEW COMMANDS:"
40 PRINT:PRINT"*P - OUTPUT TO PRINTER"
50 PRINT"*S - OUTPUT BACK TO SCREEN"
60 DATA 169,11,162,192,141,8,3,142,9,3,96,
32,115,0,201,172,240,6,32,121,0,76
70 DATA 231,167,32,115,0,201,80,240,7,201,
83,240,33,76,8,175,169,0,32,189,255
80 DATA 169,4,162,4,160,0,32,186,255,32,19
2,255,162,4,32,201,255,134,154,32,115
90 DATA 0,76,174,167,162,4,32,195,255,32,2
04,255,32,115,0,76,174,167
```

—GEOFFREY KERCHNER, OAK RIDGE, TN

\$451 RIGHT ON?

My Write-Protect Check routine assesses the write-protect status of the disk in your drive. It's compatible with the 1541 or 1571 and any Commodore computer.

The routine examines a byte in the drive's memory to determine whether the disk is write-protected. If it is, a message is printed and the computer waits for you to remove the write-protect tab and press a key. After it checks again and finds the tab off, it continues with the rest of the program. You can use this routine in any program that writes files to disk.

```
10 REM WRITE-PROTECT CHECKER-NGHIA TRAN
20 OPEN 15,8,15
30 PRINT#15,"M-R"CHR$(30)CHR$(0)
40 GET#15,V$:V=ASC(V$+CHR$(1))
50 IF V=1 THEN 70
60 IF V=16 THEN PRINT"TAB OFF":GOTO110
70 PRINT"PLEASE REMOVE WRITE-PROTECT TAB"
80 PRINT"PRESS ANY KEY WHEN READY"
90 GET B$:IF B$="" THEN 90
100 GOTO 30
110 CLOSE 15
120 REM -- YOUR PROGRAM STARTS HERE --
```

—NGHIA TRAN, PETALUMA, CA

\$452 PRINT QUALITY

I was pleased with my printer's performance until I happened to notice that the print quality was weak compared to the printers at my office. The ribbon deteriorates so slowly that it's difficult to detect any change in print quality right away. I now keep a sample sheet printed with a new ribbon for comparison.

—DAVID M. PALO, ESCANABA, MI

\$453 LONG C-64 LINES

The Basic On-Gosub command is helpful, but sometimes you need to use it in a program line with more line numbers than will fit on an 80-character screen line. To get around this, just split the line numbers into two lines. Here's an example. The line

```
100 ON A GOSUB 1100,1200,1300,1400,1500,1600,
1700,1800,1900,2000,2100,2200,2300,2400,2500
```

is too long, so we'll break it into two lines as follows:

```
100 IF A>8 THEN 110
103 ON A GOSUB 1100,1200,1300,1400,1500,1600,1700,1800
106 GOTO 120
110 ON A-8 GOSUB 1900,2000,2100,2200,2300,2400,2500
120 ... program continues here ...
```

By breaking up the long line, you can still use the On-Gosub command with almost any number of target lines.

—STEPHEN TANG, ADDRESS UNKNOWN

\$454 JUST THE FACTORS, PLEASE

This short program will find the factors of any whole number and print them on the screen.

```
10 REM FACTOR FINDER-DARYL BRANSON
20 POKE53280,0:POKE53281,12
30 PRINT CHR$(14)
```

```
40 PRINT:INPUT "WHAT'S THE NUMBER";N:N1=N
50 IF N=0 THEN END
60 IF N<10 THEN PRINT"ONLY WHOLE N
  UMBERS ABOVE 0 PLEASE!":GOTO40
70 FORFP=2 TO N
80 IF N/FP=INT(N/FP) THEN PRINTFP"*";Z=1:
  N=N/FP:GOTO70
90 NEXT:PRINT" {CRSR LF}"="N1:GOTO40
```

—DARYL BRANSON, BRANSON, MO

\$455 FINDING YOUR ROOTS

Everyone knows how to find a square root on a Commodore, but how do you find other roots? The answer is in the power, or up-arrow, function. Just raise the number to the reciprocal of the root you want. For example, to find the cube root of 1860867, enter PRINT 1860867^(1/3) to get an answer of 123. Be sure to use parentheses for the reciprocal part of the calculation.

—LANCE SLOAN, SWARTZ CREEK, MI

\$456 C-64 FANCY BORDER PRINTER

The following routine prints a border around the screen in a unique and visually interesting way. The routine starts printing in the middle of the top line and extends toward both sides, then downward and finally inward to the middle of the bottom line. When the routine is finished, the cursor appears at the upper-left corner of the screen.

```
10 REM C-64 BORDER PRINTER-J.R.CHARNETSKI
20 C$="{CTRL 9}*"":PRINT"{SHFT CLR}";
30 FORI=1 TO 19:PRINTTAB(20-I)C$TAB(19+I)C$
  "{HOME}";:NEXT
40 FORI=1 TO 24:PRINTC$SPC(38)C$;:NEXT
50 PRINTC$TAB(38)C$"{CRSR LF}"{SHFT INST} {
  CRSR UP}"
60 FORI=1 TO 19:PRINTTAB(I)C$TAB(39-I)C$"{CR
  SR UP}":NEXT
70 FORL=217 TO 242:POKE L,PEEK(L) OR 128:NEXT
80 PRINT"{HOME}":REM RETURN
90 GETA$:IFA$="" THEN 90
100 PRINT"{SHFT CLR}";:IFA$="R" THEN 30
```

—JOSEPH R. CHARNETSKI, DALLAS, PA

\$457 C-64 SCREEN ROW CLEAR

You can clear any single line on the C-64's screen with this line:

```
POKE 781,X:SYS59903
```

The value of X determines the line to be cleared and ranges from 0 to 24. You can clear a section of the screen with a short loop. As an example, the following will clear the top five lines:

```
FOR X=0 TO 4:POKE 781,X:SYS59903:NEXT
```

—JING BO LI, BROOKLYN, NY

\$458 C-64 SYSOUND

Programming the 64's sound chip is tedious at best. My program simplifies the process. To play a sound, use:

```
SYS 679,AD,SR,HF,LF,W,D
```


MAGIC

where AD is the attack/decay rate (use values 0-255), SR is the sustain/release rate (values 0-255), HF is the high frequency of the note (INT(frequency/256)), LF is the low frequency (frequency - HF*256), W is the waveform (triangle = 17, sawtooth = 33, noise = 129) and D is the duration of the sound (0-255). If you accidentally use a duration that's too long, stop the sound with run-stop/restore. The program uses only voice #1.

```
Ø REM C-64 SOUND-RICHARD PENN
1Ø FORU=679TO753:READQ:POKEU,Q:C=C+Q:NEXT
2Ø IFC<>9932THENPRINT"CHECK DATA":STOP
3Ø PRINT:PRINT"SYS 679,A/D,S/R,HF,LF,W,D":
  SYS679,Ø,24Ø,34,75,17,25
4Ø DATA 32,23Ø,2,169,15,141,24,212,32,241,
  183,142,5,212,32,241,183,142
5Ø DATA 6,212,32,241,183,142,1,212,32,241,
  183,142,Ø,212,32,241,183,142
6Ø DATA 4,212,32,241,183,134,2,162,1Ø,16Ø,
  255,136,2Ø8,253,2Ø2,2Ø8,248,198
7Ø DATA 2,165,2,2Ø8,24Ø,32,23Ø,2,96,16Ø,24,
  169,Ø,153,24,212,136,2Ø8
8Ø DATA 25Ø,96,Ø
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$459 ENHANCED 64 NOTEPAD MENU

Here's an enhanced version of the main menu of Bob Kodadek's fine 64 Notepad V3.0 program (Listing 3 on page 47 of the June 1987 issue of RUN). Load the listing and change or add the lines below:

```
Ø REM NOTEPAD MENU-FRANK S RUARK
1ØØ PRINT CHR$(147)SPC(92)F$
11Ø PRINT SPC(82)"1.PRESS CTRL-O TO OPEN W
  INDOW."
111 PRINT SPC(44)"A. SHIFT-CLR ERASES GARB
  AGE"
112 PRINT SPC(4)"B. CTRL-D LISTS 1-KEY DOS
  COMMANDS"
```

```
113 PRINT SPC(4)"C. CTRL-P CHANGES TEXT CO
  LOR"
114 PRINT SPC(4)"D. F1 SAVES WINDOW"
115 PRINT SPC(4)"E. F3 PRINTS WINDOW"
116 PRINT SPC(4)"F. F5 PRINTS FULL SCREEN"
117 PRINT SPC(4)"G. F7 LOADS A SAVED WINDO
  W"
12Ø PRINT SPC(42)"2.PRESS CTRL-C TO CLOSE
  WINDOW."
13Ø PRINT SPC(82)"3.PRESS RUN/STOP-RESTORE
  TO DISABLE."
14Ø PRINT SPC(82)"4.TO RE-ENABLE, ENTER SY
  S 51Ø72." :SYS51Ø72
15Ø NEW
```

Slight changes in the SPC() entries of lines 100, 110, 120, 130 and 140 make room for the new lines 111-117 above. Now all functions appear on the menu, indented to show that they are executed inside the opened window.

—FRANK S. RUARK, WINSTON-SALEM, NC

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. The Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for C-128 mode only are not eligible for Trick of the Month.

If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

MEGA-MAGIC

Learn exactly where the program and sequential files are located on your disks.

TRACKING DOWN TRACKS AND SECTORS

My utility program gives you the disk track and sector of any sequential file or Basic or machine language program.

When you run the program, enter the complete filename (no wild cards); then enter P or S for the type of file you want to locate. The program will open the directory and read the two bytes immediately preceding the filename

you've entered. These two bytes hold the track and sector information for the first block of your file. They'll be displayed on the screen, and if there are more blocks, the program asks if you want to see the track and sector of each remaining block. If you answer Y, the other blocks will also be displayed. ☐

—JOSEPH R. CHARNETSKI, DALLAS, PA

**RUN it right:
C-64, C-128;
1541 or 1571 disk drive**

Check Out RUN's New Checksum

Create a Personalized Calendar

RUN

THE COMMODORE 64/128 USER'S GUIDE

January 1988
An IDGC/I Publication
U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

Make 1988 Your Best Ever

28 Self-Help Programs

RUN TERM 128—Get On-Line In Style!

Plus:

- ▶ Memo Book
- ▶ Blank It!
- ▶ C-64 Road Racer



MAGIC

Drive a hot race car down a zig-zag track; rename disks to clear the screen when the directory is listed; add over 2K of additional RAM to Basic 7.0.

Compiled by TIM WALSH

\$45A FRERE JACQUES

Wouldn't you love to attend an evening *soiree* in Paris? Or maybe catch a *bain de soleil* on the French Riviera? Close your eyes and play my program a few times on your C-128 for an uplifting French experience. *Merci!*

```
0 REM FRERE JACQUES - JIM WALLACE :REM*231
10 TEMPO 11 :REM*107
20 PLAY"V105T5" :REM*61
30 A$="QCDECCDECEFHGQEFHG :REM*28
40 B$="IGAGFQECIGAGFQEC" :REM*73
50 C$="QC04G05HCQC04G05HC" :REM*89
60 PLAY A$+B$+C$ :REM*147
```

—JIM WALLACE, TOMS RIVER, NJ

\$45C C-64 SLIDING MESSAGE

If you'd like to jazz up your programs a little, use my short routine, called Sliding Message. It will spice up any program introduction, error message or other display.

Place your message in line 10 of the program, and use line 30 to change the filler character. Adjust the delay (default=50) and see what happens. To slide the message once, delete line 70.

```
0 REM SLIDING MESSAGE - JOHN GOTTS :REM*149
10 A$="ANY MESSAGE UP TO 39 CHARACTERS!" :REM*179
20 A=LEN(A$):DIMB$(39):PRINT"(SHFT CLR)" :REM*4
30 FORT=1TO39-A:A$=" "+A$:NEXT A=39:REM*49
40 FORT=1TOA:B$(T)=MID$(A$,T,1):NEXT :REM*41
50 FORT=ATO1STEP-1:PRINT"{HOME}{5 CRSR DNs } {SHFT INST}"B$(T):FORX=1TO50:NEXT:NEXT :REM*37
60 FORT=1TOA:PRINT"{HOME}{5 CRSR DNs} ";CH :REM*65
R$(20):FORX=1TO50:NEXT:NEXT :REM*200
70 GOTO50
```

—JOHN E. GOTTS, STERLING HEIGHTS, MI

TRICK OF THE MONTH

\$45B C-64 ROAD RACER

If you liked River Run (September 1987), then you'll love C-64 Road Racer. Your car is a sprite (could it be an Austin Healy sprite?) that you pilot down a winding race course, using the H (to turn left) and J (to turn right) keys. Every marker you pass adds one point to your score.

So challenge your reflexes with some intense driving. If your racing skills already approach those of Formula-One caliber, decrease the course width (variable W).

```
0 REM C-64 ROAD RACER - J. R. CHARNETSKI :REM*7
10 DATA 240,0,15,243,255,207,243,255,207,2 :REM*54
55,60,255,243,90,207,243,102,207,243 :REM*65
20 DATA 126,207,3,126,192,3,60,192,3,255,1 :REM*192
92,3,255,192,3,0,192,3,0,192,3,0,192 :REM*250
30 DATA 243,0,207,243,129,207,243,195,207,2 :REM*174
55,231,255,241,255,143,240,255,15,240 :REM*245
40 V=53248:FORU=832TO894:READN:POKEU,N:NEX :REM*174
T :REM*245
50 POKEV+32,0:POKEV+33,0:DATA 126,15,0 :REM*245
60 W=10:R=54296:I=7:J=12:L=1986:M=8:MK=81:
```

```
B=198:S=1-J:X=140:POKE2040,13:POKEV,X :REM*117
70 POKE646,INT(RND(1)*J+2):PRINT"(SHFT CLR :REM*54
)ROAD RACER (-H J-) PRESS ANY KEY":POKE :REM*135
B,0 :REM*135
80 WAITB,1:POKEV+1,139:POKEV+39,1:POKEV+21 :REM*207
,1:P=PEEK(V+31):FORD=1TO23:PRINT:NEXT :REM*207
90 POKER,J:S=S+1:IFZ=0THENI=I+1 :REM*54
100 N=PEEK(197):IFN=29 THEN IFX>60 THEN X= :REM*248
X-M :REM*248
110 IF N=34 THEN IFX+M<256 THENX=X+M :REM*213
120 IFI=INT(RND(.)*J+M)ORI>20THEN Z=1-Z :REM*197
130 POKEV,X:IFZTHENI=I-1:IF I<3THENZ=. :REM*85
140 POKER,0:POKEL+I,MK:POKEL+I+W+1,MK:PRIN :REM*126
T :REM*126
150 ON-(PEEK(V+31)=.)GOTO90:POKEV+21,0 :REM*166
160 PRINT"{SHFT CLR}SCORE="S:PRINT"{CRSR D :REM*210
N}TRY AGAIN Y/N?":POKEB,0:WAITB,1:GETA :REM*210
$:IFA$="Y"THEN60
```

—JOSEPH CHARNETSKI, DALLAS, PA

MAGIC

\$45D KEYPRESS DETECTOR

Mention the number 653 to most C-64 programmers, and they immediately think, "wait," because a program's execution can be stopped by entering the WAIT 653,1 command.

I wrote a short program that reacts to the control, Commodore and shift keys—the keys that affect location 653. By using the logic in my Magic program, you can write routines that halt program execution until two or more keys are pressed simultaneously.

```

0 REM KEYPRESS DETECTOR - T. WALSH:REM*192
10 PRINT"{SHFT CLR}":R=PEEK(653) :REM*115
20 A$="{CTRL 2}SHIFT":B$="{CTRL 8}COMMODORE":C$="{CTRL 1}CONTROL":D$="{CTRL 4}":E$="." :REM*244
30 F$="{HOME}{COMD 7}YOU'RE PRESSING " :REM*69
40 IF R=0 THEN 130 :REM*112
50 IF R=1 THEN 120 :REM*137
60 IF R=2 THEN A$=B$ :REM*75
70 IF R=3 THEN A$=A$+D$+B$ :REM*54
80 IF R=4 THEN A$=C$ :REM*110
90 IF R=5 THEN A$=A$+D$+C$ :REM*107
100 IF R=6 THEN A$=B$+D$+C$ :REM*116
110 IF R=7 THEN A$=A$+D$+B$+D$+C$ :REM*185
120 PRINT F$+A$+E$:GOTO 10 :REM*216
130 RUN :REM*13

```

—TIM WALSH, RUN STAFF

\$45E CLEAR SCREEN DIRECTORY

After renaming a disk using the trick below, the screen automatically clears whenever you list the disk directory to the screen. In its present form, the program requires that the disk be formatted beforehand, but the technique I use is outlined in line 50, and it can be applied to format a disk, as well.

```

0 REM CLEAR SCREEN DIRECTORY - CHARLES JONES :REM*215
10 INPUT"{SHFT CLR}NAME OF DISK:":DN$ :REM*169
20 PRINT"PLACE A FORMATTED WORK DISK IN DRIVE" :REM*45
30 PRINT"AND PRESS RETURN..." :REM*107
40 GET A$:IF A$="" THEN 40 :REM*224
50 OPEN15,8,15,"N:"+CHR$(13)+"{SHFT CLR}"+DN$ :REM*199
60 CLOSE15 :REM*220
70 PRINT"{SHFT CLR} CLEAR SCREEN DIRECTORY INSTALLED!" :REM*231

```

—CHARLES JONES, CARRIERE, MS

\$45F LABAR'S LAMENT

Commodore 128 users still contemplating Thomas Smith's C-128 Engineering Disaster (trick \$404, August 1987) might lapse into an altered state of consciousness over my elementary engineering enigma. So, why while winter away waiting? Don't linger any longer—lapse into LaBar's Latest Lament.

```

0 REM LABAR'S LAMENT - SI LABAR :REM*61
10 GRAPHIC1,1:DRAW 1,240, 75 TO 240, 150 TO 80, 150 TO 80, 75 TO 275, 75 TO 275,

```

```

170 TO 15, 170 TO 15, 20 TO 280, 20 TO 310, 45 TO 310, 190 TO 40, 190 TO 15,170 :REM*251
20 DRAW 1, 310, 45 TO 50, 45 TO 50, 150 TO 80, 150:DRAW 1, 275, 170 TO 245,150:DRAW 1, 80, 75 TO 50,45:COLOR1,16:PAINT 1, 160,100:PAINT 1,10,10:SLEEP5 :REM*187
30 GRAPHIC0:PRINT"{SHFT CLR}PRESS A KEY TO TOGGLE BETWEEN SCREENS" :REM*4
40 GETKEYA$:GRAPHIC1 :REM*176
50 GETKEYA$: GOTO 30 :REM*94

```

—SI LABAR, BETHLEHEM, PA

\$460 EXTRA! EXTRA! 2300 BYTES EXTRA!

Attention C-128 programmers! When you're writing Basic programs and don't need the 40-column graphics of your C-128, type in this line to get an extra 2300 bytes of Basic RAM:

```
POKE 45,1:POKE 46,19:POKE 4864,0:NEW
```

—HOWARD LEW, SAN FRANCISCO, CA

\$461 DOS 5.1 WEDGE QUICKSAVE

Nearly all C-64 users like to keep a copy of Commodore's DOS wedge on their work disks. After all, it simplifies long, complicated disk commands into one- or two-character commands. Unfortunately, since the DOS wedge is pure machine language, it isn't easily copied to disk without special techniques. Until now.

My utility, called DOS 5.1 Quicksave, quickly copies the wedge to any disk. First, load the wedge as usual, then type in DOS 5.1 Quicksave. Now insert the formatted disk you want to place the wedge on into your drive and run the program. Presto! DOS 5.1 is on the disk!

```

0 REM COPY DOS WEDGE - THOMAS B. SMITH :REM*108
10 OPEN8,8,8,"DOS 5.1":POKE251,0:POKE252,204:POKE780,251:POKE781,90:POKE782,207 :REM*113
20 SYS 65496 :REM*234

```

—THOMAS B. SMITH, GALLIPOLIS, OH

\$462 C-128 EXPLOSIVE ENDING

Dramatic sound effects can enhance almost any game. My routine makes all three voices on the C-128 rise in pitch until only one is left, followed by a powerful explosion that rocks the 40-column screen. Don't fret—everything returns to normal after the explosion.

```

0 REM C-128 EXPLOSIVE END - JOHN KUHNE :REM*59
10 SOUND 1,45000,2000,0,1,3,0 :REM*102
20 SOUND 2,45000,1500,0,1,10,0 :REM*83
30 SOUND 3,45000,1000,0,1,15,0 :REM*154
40 SOUND 1,1950,100,1,1,25,3 :REM*104
50 SOUND 2,2950,100,1,1,15,3 :REM*23
60 SOUND 3,950,100,1,1,10,3 :REM*12
70 FORK=1 TO 4:FORJ=1 TO 42:POKE53270,J:NEXT J:NEXTK :REM*65

```

—JOHN KUHNE, NEWMARKET, ONTARIO, CANADA

Continued on p. 113.

MAGIC

From p. 16.

\$463 HOW MANY COLORS, COMMODORE?

Everyone knows the C-64 and C-128 offer only 16 colors. My program creates practically every color in two or three shades. Try it on your C-64 or C-128. You'll be surprised that no one has discovered this trick before now!

```
Ø REM HOW MANY SCREEN COLORS? - AL SPEICHE
R                                     :REM*5
1Ø PRINT"(SHFT CLR)":T=1             :REM*164
2Ø Q$="(2 COMD Gs){2 SHFT Ts}{SHFT G}{2 SH
  FT Bs}{SHFT H}{SHFT Y}{3 COMD Ms}{SHFT
  Y}{SHFT H}{2 SHFT Bs}{SHFT G}{SHFT T}{C
  OMD G)":Q$=Q$+Q$:POKE53281,T-1:POKE5328
  Ø,T-1                               :REM*18
3Ø T=T+1:POKE646,T:FOR S =1 TO 5Ø:Q$=MID$(
  Q$,2,55)+LEFT$(Q$,1)               :REM*226
4Ø PRINTQ$:NEXT                      :REM*68
5Ø GOTO 2Ø                           :REM*174
```

—AL SPEICHER, SALINE, MI

\$464 LOU'S SEQUENTIAL SAGA

If you want to convert a Basic program on disk into a sequential file for reading it unaltered into a word processor or terminal program, use this one-liner:

```
OPEN 8,8,"FILENAME,S,W":CMD8:LIST:PRINT#8:CLOSE8
```

Enter it in Direct mode and be sure you already have a program in memory.

—LOUIS WALLACE, RUN STAFF

\$465 C-64 SEQUENTIAL DIRECTORY CREATOR

My program, Sequential Directory Creator, is an alternative to Lou's Sequential Saga. Suppose you want filenames from disk directories incorporated into word processors in text form. Run my program once for every disk you want to capture filenames from, and it will automatically create a sequential file of each disk's directory.

A write-protect tab cannot be on the disk to be cataloged, because the filename you enter at the first prompt will be written to disk as a sequential file that contains all the filenames from that disk. After running my program and creating a sequential file of the directory, simply read that file into your word processor.

```
1Ø REM SEQUENTIAL DIRECTORY - AL FORTIER
                                     :REM*245
2Ø PRINT"(SHFT CLR)INSERT DISK TO READ"
                                     :REM*172
3Ø INPUT"(CRSR DN)ENTER A FILENAME FOR THE
  DISK";F$                          :REM*233
4Ø DIMD$(144):OPEN1,8,Ø,"$Ø"       :REM*73
5Ø GET#1,A$,A$                     :REM*241
6Ø GET#1,A$,A$:IFA$=""THEN CLOSE1:GOTO 12Ø
                                     :REM*183
7Ø GET#1,A$,B$                     :REM*28
8Ø C$=MID$(STR$(ASC(A$+CHR$(Ø))+ASC(B$+CHR
  $(Ø))*256),2)+CHR$(32)           :REM*145
9Ø GET#1,A$:IFA$=""THEN 11Ø        :REM*82
1ØØ D$(I)=D$(I)+A$:GOTO 9Ø         :REM*21Ø
11Ø D$(I)=C$+D$(I):PRINTD$(I):I=I+1:GOTO 6
Ø                                   :REM*196 ▶
```

NEW VERSION 3.0
FOR C64 & C128
IN 128 MODE.

WIBBOW

THE MIRROR

WIBBOW

DISK COPIER

\$24.95

NO FINER OR MORE ADVANCED ARCHIVAL COPIER AVAILABLE AT ANY PRICE.
EASY TO USE. DOES NOT CAUSE DRIVE HEAD TO KNOCK.
COPIES UP TO 41 TRACKS.
PERIODIC UPDATE POLICY.
AUTOMATICALLY MAKES BACK-UP COPIES FROM VIRTUALLY ALL PROTECTED SOFTWARE.
NIBBLES, HALF TRACKS, COPIES EXTRA SECTORS AND EXTRA TRACKS.
REPRODUCES ALL DISK ERRORS AUTOMATICALLY.
FAST. COPIES FULL DISK IN AS LITTLE AS 4-7 MINS. EVEN COPIES ITSELF.

WE COPY MORE!
MASTERCARD, VISA, M.O. OR CHECK OK
+ \$3 SHIPPING & HANDLING
C.O.D. OR FOREIGN ORDERS ADD \$2
CALIF. ORDERS ADD 6% SALES TAX
— WRITE OR CALL —

Computed

(408) 758-2436
P.O. BOX 6939
SALINAS, CA 93912
FOR COMMODORE 64 AND 1541 DRIVE
OR COMMODORE 128 AND 1571 DRIVE




Circle 251 on Reader Service card.

PROF JONES

SUMMER/FALL 1987

ORDER LINE
(208) 342-8939

THOROUGHBRED
GREYHOUND
HARNESS
LOTTERY/LOTTO
FOOTBALL
BASKETBALL
OFFICE HOURS
M-F 8 AM - 5 PM
SAT 9 AM - 1 PM
(Mountain Standard Time)

FREE CATALOG

1940 W. STATE
BOISE, IDAHO 83702




PROFESSIONAL HANDICAPPING SYSTEMS

PROFESSIONAL SERIES™

PROFESSIONAL HANDICAPPING TOOLS FROM PROF. JONES

The New PROFESSIONAL SERIES™ "Software for the Serious Handicapper"



Thoroughbred



Greyhound



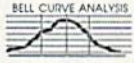
Horse Pull

• **Mini-Pro Analysis™** \$149.95
Complete race analysis for the sophisticated handicapper with single screen input, holding tanks to check entries, powerful use of 30 variables in data manipulation, complete "HELP" functions, and more.

• **Analysis Module™** \$249.95
Our comprehensive, full featured package contains **Mini-Pro Analysis** plus betting analyses, money managers, post position adjusters, fractional adjusters, multi-track abilities, watch lists, and on-screen betting philosophy.

• **Multiple Regression Module™** \$149.95
Using linear regression, this module regresses out factors relating to winning animals and then automatically recalculates the weighting formula as successive races are analyzed to derive the most precise formula possible, dramatically increasing win percentage!

NEW for 1987



BELL CURVE ANALYSIS



CLUSTER ANALYSIS

PROFESSIONAL LOTTERY/LOTTO™ \$149.95
Cutting edge analyses for the serious professional. Contains Bell Curve, Central Tendency, Cluster Analysis, and 17 Dimitrov Systems, for complete, high accuracy analysis of Lottery or Lotto.



Cumulative Stats
Last 4 weeks
Last 2 weeks
Previous Weeks?



Power Plays
(49ers)
Bills
Vikings
Seahawks

PROFESSIONAL SERIES FOOTBALL™ \$199.95
A flexible, high performance football analysis with complete built-in scheduling, excellent file capacity, single input for two teams, and high accuracy, contains predictors for team scores, over/under, non-bets, regular bets and superbets. The regression analysis is adjustable to give results based on any number of previous weeks.

DOOKIE BUSTER™ FOOTBALL ANALYSIS \$149.95
A high accuracy football analysis using 21 separate and structured analyses and a complete database of all NFL games from 1978 to 1986 to predict the spread winner.

Terms: Free shipping all software. Add \$6.00 COD / \$6.00 UPS Blue / \$9.00 International delivery / ID residents add 5%. Allow 3 weeks when paid by personal check. Prices above are for cash or money order only. Add 3% for Visa, MasterCard, and AMEX. Prices subject to change.

Many more programs available.
Call today for a copy of our **FREE CATALOG!**

Circle 74 on Reader Service card.

VOTALKER C-64

From Votrax

- Easy to Use-Plug in and Speak
- Clear, Unlimited Speech
- Screen Echo Speaks Words and Symbols
- Rate, Pitch and Volume Controls
- Completely ROM Based, No Software to Load
- Self-Contained Speaker



The ultimate speech synthesizer
for the Commodore 64 or the
C-128 in C-64 mode.

Special Price \$59.95*



VOTRAX, INC.

1394 Rankin, Troy, Michigan 48063-4074
(313) 588-2050 TWX-8102324140 Votrax-TRMI

Call Votrax at (800) 521-1350

*Plus shipping and handling while supplies last

Circle 186 on Reader Service card.

D540

1541 COMPATIBLE DISK DRIVE
GEOS, SUPERKIT, FAST HACK'EM COMPATIBLE

- EXTERNAL DEVICE NO SELECTION
- UTILITY PROGRAMS FOR FAST DISKETTE FORMAT

\$155



To Order

Call 1-800-521-9298

(in NJ, Dial 201-874-4072)

VISA, MASTERCARD or Money Order. Allow \$8.00 shipping & handling, and \$5.00 for credit card service. (NJ residents add \$9.30 tax). Send mail order with payment to:

H&M MARKETING

P.O. BOX 8339 SOMERVILLE, NJ 08876

MAGIC

```
120 OPEN 2,8,2,F$+"",S,W"      :REM*176
130 FORJ=0 TO I-1                :REM*131
140 PRINT#2,D$(J):NEXT          :REM*35
150 CLOSE 2:END                  :REM*76
```

—AL FORTIER, BOISE, ID

\$466 ALTERNATIVE RESET

Are you tired of resetting your C-128 with the reset button? My program literally provides an ALT-ernative by letting you press the ALT key at the top of the keyboard to accomplish the same thing. Type in the program and save it to disk before running it. When you run it, pressing the ALT key in 128 mode resets the system. You can use run-stop/restore to disable it and the F4 key or SYS 4864 to re-enable it.

```
0 REM ALT RESET - NELSON SEARCY :REM*144
10 KEY 4,"BANK15:SYS4864"+CHR$(13):REM*211
20 FOR B= 4864 TO 4892:READ K$:A=DEC(K$):C
=C+A:POKEB,A:NEXT:IF C<>2566 THEN PRINT
"ERROR IN DATA":END :REM*177
30 BANK 15:SYS4864 :REM*121
40 DATA 78,A9,D,8D,14,3,A9,13,8D,15,3,58,6
0,AD,D3,0,C9,8,F0,3,4C,65,FA,4C,0,E0,0,
0,0 :REM*151
```

—NELSON SEARCY, FOREST CITY, NC

\$467 CONTROL-G ON THE 64

Most C-128 owners know that if they press control-G on their computers, it rings the C-128's ROM bell. My little routine gives the C-64 a control-G key combination that sounds identical to the C-128's bell.

```
0 REM C128 BELL FOR THE C64 - BARBARA SCHU
LAK :REM*199
10 PRINT"{SHIFT CLR}PRESS CTRL-G TO HEAR TH
E C-128'S BELL." :REM*241
20 GET K$: IFK$<>"{CTRL G}" THEN 20 :REM*0
30 GOSUB 50 :REM*164
40 GOTO 20 :REM*164
50 V=54273:POKEV+23,21:POKEV+4,9:POKEV+5,0
:POKEV,48:POKEV+3,32:POKEV+3,33:REM*209
60 RETURN :REM*202
```

—BARBARA SCHULAK, PEPPER PIKE, OH

\$468 WEAR-'N'-TEAR SAVER

When I need to leave my computer for a while, I use my Magic trick, Wear-'n'-Tear Saver, to minimize stress on computer peripherals by keeping them cool when they're not in use. And it saves electricity, as well.

When I want to stop working at my computer for a while, I save my work, turn off the video monitor, remove the disk and turn off the drive. Of course, I always leave the computer on.

When I return, I just turn on the monitor, and my video display instantly appears with the cursor located right where I left it. I then switch on the disk drive, pop in my work disk, initialize it and resume working.

—ALF, MELMAC ■

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the

RUN

February 1988
An IDGC/I Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

THE COMMODORE 64/128 USER'S GUIDE

Software Simulations

On Land, Sea
And Air

How to Win
On Wall Street

Plus:

- ▶ RUN's Amazing 64
Disk Backup
- ▶ 128 Basic
Mouse Editor
- ▶ Timekeeper 64
- ▶ Blank It! 128



MAGIC

Learn how to find Data statement errors in listings you typed in; discover some 1581 revelations; and make your 64's screen positively "glow."

Compiled by TIM WALSH

\$469 FINDING DATA STATEMENT ERRORS

Everyone, including myself, makes mistakes typing in Data statements from magazine listings, especially if a checksum is not used. Usually you'll get an Error in Data message or Illegal Quantity Error in Line XX.

Here is an outline of a method for finding incorrectly typed or missing numbers, missing commas and periods mistyped for commas. Suppose, for example, you run the program you've spent so much time typing in and get an Illegal Quantity Error in line XX. Line XX is that line containing the command READ D, and the line might appear as follows:

```
30 FOR T=49152 TO 50035: READ D: POKE T,D: CK=CK +
  D: NEXT
```

Line 30 generates the error because READ D, the command to read the Data statements, encounters a number it can't read, such as 3036 (too many digits or a comma missing) or 3.036 (a period substituted for a comma). So the problem actually lies in one or more Data statements.

What you can do is modify line 30 by adding two lines to give you a routine that puts each number in the Data statements on the screen for you to check against the magazine listing. To line 30 (or whatever line contains the READ D command), append PRINT D directly after the READ D

command, and delete anything following it in that line. Here's an example:

```
30 FOR T=49152 TO 50035: READ D: PRINT D
```

Now enter the following two lines to complete the routine, using your own appropriate line numbers:

```
31 GET A$: IFA$="" GOTO 31
32 NEXT
```

Run the program, and the first number from the Data statements will appear on the screen. When you've verified that the number coincides with the listing, press any key to get the second data number. Continue until you find the incorrect one, press the stop key, list the line with the error, make the correction and press return to enter the line into memory.

Now run the routine again, holding down the space bar to return to the last data number you checked. Continue to verify the numbers and make any needed corrections.

Once all the corrections have been made, type in the original line 30, remove lines 31 and 32 and re-save your program. The program should then work well. You can use this trick to troubleshoot programs written for any Commodore computer.

—TIM WALSH, RUN STAFF ▶

TRICK OF THE MONTH

\$46A 64 SCREEN GLOW

A mere description won't do this program enough justice. You'll have to type it in to see how good it is. An interrupt-driven, character-color screen manipulator, 64 Screen Glow cycles the C-64's characters through the Commodore rainbow of colors, even while other programs are running. No other color-cycling routine could possibly add more eye-catching sparkle to your text displays. Its only limitation is that it won't work with other wedge-type programs occupying memory locations 49152 to 49269.

```
0 REM 64 SCREEN GLOW - DAILAH HODGE
                                :REM*51
10 FOR T= 49152 TO 49269:READ A:POKE T,A:
  S=S+A:NEXT                    :REM*10
20 IF S<>10540 THEN PRINT"ERROR IN DATA":
  END                            :REM*193
30 SYS 49152                    :REM*204
```

```
40 DATA 120,169,21,141,20,3,169,192,141,2
  1,3,160,0,140,84,192,140      :REM*5
50 DATA 86,192,88,96,172,84,192,200,140,8
  4,192,192,3,208,49,160,0      :REM*143
60 DATA 140,84,192,172,86,192,185,87,192,
  162,0,157,0,216,157,0,217    :REM*220
70 DATA 157,0,218,157,0,219,141,134,2,232
  ,208,238,169,0,141,32,208    :REM*200
80 DATA 141,33,208,200,192,30,208,2,160,0
  ,140,86,192,76,49,234,0      :REM*149
90 DATA 0,0,6,9,11,2,8,4,14,12,10,5,3,15,
  7,13,1                        :REM*85
100 DATA 1,13,7,15,3,5,10,12,14,4,8,2,11,
  9,6,0                         :REM*178
```

—DAILAH HODGE, ST. CROIX, VIRGIN ISLANDS

\$46B BASIC ARTWORK 64

Dazzling, animated computer-generated graphics are all the rage at art museums. Artistically inclined C-128 owners have it easy, because plenty of short "artsy" Basic 7.0 animation programs have been published for that machine. Animated C-64 graphics, on the other hand, usually consist of many Basic 2.0 commands and/or cryptic machine language routines.

My program, Basic Artwork 64, creates animated "op-art" with only four short lines of Basic 2.0. Your screen comes alive with a fully synchronized, changing pattern of scrolling lines, sure to draw crowds at any art show.

```

0 REM BASIC ARTWORK 64 - MATT MCELLIGOTT
                                :REM*100
10 POKE53280,0:POKE53281,0:POKE646,1:A$="
   {COMD Y}{SHFT E}{SHFT D}{SHFT *}{SHFT F
   }{SHFT R}{COMD P}"
                                :REM*233
20 FOR I=1 TO 7:A$(I)="{ 2 SPACES}":FORJ=1 TO 5
   :A$(I)=A$(I)+MID$(A$,I,1):NEXTJ,I
                                :REM*189
30 FORI=1 TO 7:PRINTA$(I),A$(I),A$(I),A$(I):
   NEXTI
                                :REM*229
40 FORI=7 TO 1STEP-1:PRINTA$(I),A$(I),A$(I),
   A$(I):NEXT:GOTO30
                                :REM*95

```

—MATT MCELLIGOTT, ALFRED, NY

\$46C PLAY IT AGAIN, AXEL

Long after you've forgotten the weak plot and mediocre story line in "Beverly Hills Cop," the movie's beautiful theme song, "Axel F," stays in your mind. Here's a flawless rendition for your C-128.

```

0 REM AXEL F ON THE 128 - JONATHAN EACOTT
                                :REM*100
10 TEMPO 19:PLAY"T5 V1 03A04C03A 04C03AGA0
   4E 03A04FEC03A04EA 03AGEBARHRQ A04C03A
   GAO4E 03A04FEC 03A04EA03AGEBA" :REM*22
20 PLAY" T5 V1 QRHRQ03A 04A03E 04EGAO3FO4F
   03GO4GO3GAO4AR GEDCO3A04A 03GO4GE 03GA
   04A03E 04EGAO3FO4F 03GO4GO3GA 04ARGEDC
   "
                                :REM*190
30 PLAY"T5 V1 03A 04C03A04DO3AGA 04EO3A04F
   EC 03AGEBAR HRQ03A 04C03A04E 03A04FEC03
   A 04EAO3A GEBARHRIR"
                                :REM*254
40 PLAY "T5 V1 I E QEGGG#F#F#FEEGG #FE#CIR
   CCCCCDDDEEEDEEEIRE QEGGG#F#F#FEEGG#FE#
   CIRC QCCCCDDDEEEDEEE"
                                :REM*112
50 TEMPO 20:PLAY"T5 V1 WDQRHRO4AGE QDCHARR
   WDQRHRAGEQDCHARR QO3A04C03A04DO3AGA 04E
   03A04FEC03A 04EAO3AGEBAQRHRO3QA 04C03A0
   4DO3AGA04E 03A04FEC03A04EAOAGEBA":REM*9
60 TEMPO 24:PLAY"V2 T9QRHRQ04C03":FORS=1 TO
   9:PLAY"GO4C03":NEXT
                                :REM*96
70 FORI=1 TO 8:PLAY"V2 T9 GO5C04GO5C04GO5C04
   ":NEXT
                                :REM*235
80 PLAY"V2 T9 04GEDCDEGGEDCGEDCDEGED CCDEG
   EDCGEDCDEGEDCGEDC DEGEDCGEDCDEGEDC GEDC
   DEGEDCG EDCDEGEDCGEDCDEGEDC"
                                :REM*237
90 TEMPO 20:PLAY"V1 T5IREQEGG#F#F#FEEGG #F
   ED#CIRCQCCCCDDDEEEDEEE IREQEGG#F#F#FEE

```

```

GG #FE#CIRCQCCCCDDDEEEDEEEIR" :REM*63
100 PLAY"V1 T5I#CQ#C#C#CDDDEEEEDDDE 03A04C
   03A04DO3AGA04E 03A04FEC03A04EAO3AGEB O
   4AQRHR"
                                :REM*206

```

—JONATHAN EACOTT, WOODSTOCK, ONT., CANADA

\$46D SHIFTED-L ENCRYPTION

When you write C-64 Basic programs containing programing secrets or some personal notes, you don't want anyone to see them. To keep prying eyes and minds away from your listings, use lots of lines containing REM (SHIFT-L) statements throughout the program. These print a Syntax error to the screen whenever someone tries to list your program. Of course, you run the danger of not knowing which lines contain those shifted L's when you want to list the program to view those notes yourself. The trick then is to run my program, Shifted-L Encryptor, which disables the shifted-L Syntax error and lets you list programs containing shifted Ls.

```

0 REM SHIFTED-L ENCRYPTOR - JEFF MARTIN
                                :REM*66
10 FORT= 828 TO 872:READ A:POKET,A:NEXT
                                :REM*169
20 SYS 828:END
                                :REM*188
30 DATA 169,0,133,252,169,8,133,253,160,0,
   177,252,201,204,240,22,201,0,240
                                :REM*112
40 DATA 9,230,252,208,2,230,253,76,68,3,20
   0,192,3,240,3,76,70,3,96,169,203:REM*67
50 DATA 145,252,76,68,3
                                :REM*35

```

—JEFF MARTIN, ROSEVILLE, CA

\$46E 64/128 MULTIPLE COPIES

Every Commodore computer offers some form of a Copy command for the disk drive. Yet Copy is much neglected, mainly because it's awkward to use, especially in its confusing Basic 2.0 syntax, which looks like:

```
OPEN 15,15,"C0:NEWFILE=OLDFILE":CLOSE 15
```

Complicating the issue, the C-128's Basic 7.0's Copy command has the filenames in reversed order:

```
COPY "OLDFILE" TO "NEWFILE"
```

In order to give RUN readers more exposure to Copy, I've written a useful utility that works in both 64 and 128 modes and uses the Basic 2.0 Copy command to make multiple copies of any sequential, program or user disk file you want. Place the disk containing the file to be copied into the disk drive; then enter the name of the file at the first prompt and the number of copies at the second prompt.

Bear in mind that this is intended to copy only noncopy-protected files, so don't waste time trying to copy your favorite flight simulator with this trick—it won't work.

My program truncates the filename you enter down to twelve characters, and then, for each copy, appends a number from 1 up to and including the number of copies you specify at the prompt. So if you enter, say, the filename "supercalifragilistic" and specify 15 copies, the copies will have the filenames "supercalifra#1," "supercalifra#2," and so on. The screen constantly displays the number of each copy as it's

Continued on p. 92.

PRICE & QUALITY

**YOU CAN DEMAND IT FROM OTHERS—
BUT YOU CAN EXPECT IT FROM APROTEK**

Aprospand-64™ Gives your Commodore 64 or 128 full expandability! This superbly designed expansion module plugs into the expansion port and gives you four switchable (singly or in any combination) expansion connectors—plus fuse protection—plus a reset button! Before you buy an expander, be sure that it has a fuse to protect your computer and that you can activate your cartridges in any combination allowed by the cartridges.

The
Original



Fully
C-128
Compatible

ONLY \$29.95 + S&H

Order #5064

UNIVERSAL RS-232 INTERFACE

with Commodore USER Port expansion. **ONLY \$39.95+S&H**

Now you can connect and communicate with any of the popular RS-232 peripherals using your Commodore USER Port. This superb expander opens a whole new world to your Commodore computer's capabilities. You can now connect to printers, modems and any other RS-232 device. If you already have something that connects



to the USER Port, don't worry because the port is duplicated on the outside edge of the interface. Simply plug it in and turn on the device you want to communicate with. Comes complete with sample driver program listings. Compatible with all Commodore home computers with a USER port. 1-year warranty. **Order #5232.**

NEW! "COM-MODEM" ADAPTER — Use any Hayes® compatible modem with DB-25 connector through your USER port. You can make it emulate a 1670 too, or turn it off entirely. Can be used with our other USER port equipment such as "USER EXTENDER" (#5250) or "UNIVERSAL RS-232 INTERFACE" (#5232).

Order #5100 \$18.95 + S&H

"EXTENDER-64" — 10" Ribbon cable extender for your Commodore CARTRIDGE port. Used with Aprospand-64.

Order #5065 \$19.95 + S&H

"USER EXTENDER" — 10" Ribbon cable extender for your Commodore USER port.

Order #5250 \$21.95 + S&H

Commodore Interfaces and Cables

Cardprint G-WIZ Printer Interface #1108	\$39.95
Commodore 6 Pin Serial Cable (5 ft) #3006-5MM	\$ 7.95
Commodore 6 Pin Serial Cable (8ft) #3006-8MM	\$ 9.95
Commodore Serial Ext. (5 ft) #3006-5MF \$7.95, (8 ft) #3006-8MF \$ 9.95	
Amiga Printer Cable (6 ft) #3040-6MF, \$12.95, (10 ft) #3040-10MF \$16.95	
Centronics Parallel (6 ft) #3036-6MM, \$12.95, (10 ft) #3036-10MM \$14.95	

Shipping per each above item: Cont. US = \$3. Can, PR, HI, AK, APO, UPS Blue = \$6

ORDER INFORMATION California residents add 6% tax. All prices are cash prices—VISA and MC add 3% to total. We ship the next business day on money orders, cashier's checks, and charge cards. A 14-day clearing period is required for checks. Prices and availability subject to change—CALL. Available at Selected Dealers. Dealer inquiries invited. 2 week satisfaction or your money back trial period on all products.

For information and in Calif. call **805/987-2454 (8-5 PST)**
TO ORDER CALL TOLL FREE

1 (800) 962-5800 - USA (7-6 PST)

Or send order to:



APROTEK

Dept. RN
1071-A Avenida Acaso
Camarillo, CA 93010

MAGIC

```

20 IF CK<>8139THENPRINT"ERROR IN DATA":END
                                :REM*52
30 SYS 828:END                  :REM*194
40 DATA 169,71,141,24,3,169,3,141,25,3,96,
    72,138,72,152,72,169,135,160,3,141,24
                                :REM*74
50 DATA 3,140,25,3,173,0,4,141,52,3,173,0,
    216,141,53,3,173,143,3,141,0
                                :REM*139
60 DATA 4,169,3,141,0,216,88,32,228,255,20
    1,32,208,249,173,52,3,141
                                :REM*166
70 DATA 0,4,173,53,3,141,0,216,32,60,3,76,
    188,254,72,138,72,152,72
                                :REM*16
80 DATA 76,188,254,144
                                :REM*89

```

—PETER LOTTRUP, BUENOS AIRES, ARGENTINA

\$471 MORE ARGENTINIAN MAGIC

If you write large Basic programs for the C-64 or the C-128, minimize wasted time and frustration by keeping a list of all permissible variables. My program prints out a hard copy of that list.

```

0 REM PERMISSIBLE VARIABLE NAMES - RICARDO
  SASSY
                                :REM*71
10 OPEN4,4:DIMB$(11)
                                :REM*226
20 A$="ABCDEFGHIJKLMNOPQRSTUVWXYZ012345678
  9"
                                :REM*163
30 DATA DO,DS,EL,ER,IF,ON,OR,PI,ST,TI,TO
                                :REM*75
40 FORI=1TO11:READB$(I):NEXT
                                :REM*233
50 FORI=1TO26:PRINT#4,MID$(A$,I,1)+"$";SPC
  (2);:NEXT:PRINT#4
                                :REM*205
60 FORI=1TO26:FORJ=1TO36
                                :REM*81
70 NM$=MID$(A$,I,1)+MID$(A$,J,1) :REM*151
80 FORL=1TO11:IF NM$=B$(L) THENNM$="*":GO
  TO100
                                :REM*193
90 NEXT
                                :REM*220
100 PRINT#4,NM$+"$";SPC(1);
                                :REM*104
110 NEXT:PRINT#4:NEXT
                                :REM*34
120 CLOSE4:END
                                :REM*42

```

—RICARDO H. SASSY, BUENOS AIRES, ARGENTINA

\$472 UNDERLINE 64 CURSOR

Most C-128 users know they have an underline cursor in 80-Column mode by pressing the ESC/U key combination. Not wanting the C-64 to suffer the indignity of lacking an underline-cursor option, I wrote Underline 64 Cursor. Type it in, save it, then run it. Your C-64's big, blocky cursor is quickly replaced with an underline cursor.

My underline cursor looks similar to the C-128's, but it works differently. Because the C-64's default cursor is actually a reversed image of the character beneath it, my program eliminates reversed characters and replaces them with underlined characters.

```

0 REM UNDERLINE 64 CURSOR - JEFF MARTIN
                                :REM*193
10 FORT=828 TO 967:READA:POKET,A:B=B+A:NEX
  T
                                :REM*230
20 IFB<>20972 THENPRINT"ERROR IN DATA":EN
  D
                                :REM*109

```


TAKE COMMAND WITH THE NEW AND IMPROVED COMMAND CENTER



128 . . . \$124.95
64 . . . 109.95
64C . . . 109.95

Accessories:

Dust Cover - 19.95
Keyboard Cover - 19.95
Drive Reset - 14.95
Tilt-Swivel Monitor Stand - 14.95
Serial Cable - 9.95
Cartridge Port Ext. Cable - 24.95
Modem Switch - 9.95

-KETEK

P.O. Box 203, Oakdale, IA 52319

For faster service, call
1-800-626-4582 toll free
1-319-338-7123 (IA Residents)

Shipping and Handling

Continental U.S.
\$4.50 for each Command Center
\$2.00 for one accessory item
\$3.00 for two or more accessories



Just look at these features:

- Built-In Power Strip with surge and noise protection
- Built-In Cooling Fan
- Modular Phone Plug with Switch (optional on 64 & 64C)
- Master Power Switch
- Compatible with Single or Dual Drives

Data Director



\$39.95

- Eliminates Cable Swapping
- Shares 2 6-pin Serial Devices
- LED Indicator Lights
- Reset Button

APO/FPO/Canada/Puerto Rico/
Hawaii/Alaska

\$13.00 for each Command Center
\$ 4.00 for one accessory item
\$ 6.00 for two or more accessories

Circle 6 on Reader Service card.

.SUPER 81 UTILITIES

Super 81 Utilities is a complete utilities package for the Commodore 1581 Disk Drive and C128 computer. Copy whole disks or individual files from 1541 or 1571 format to 1581 partitions. Backup 1581 disks. Contains 1581 Disk Editor, Drive Monitor, RAM Writer, CP/M Utilities and more for only \$39.95.

1541/1571 DRIVE ALIGNMENT

1541/1571 Drive Alignment reports the alignment condition of the disk drive as you perform adjustments. Includes features for speed adjustment and stop adjustment. Includes program disk, calibration disk and instruction manual. Works on C64, C128, SX64, 1541, 1571. Only \$34.95.

"...excellent, efficient program that can help you save both money and downtime." *Computer's Gazette*, Dec., 1987.

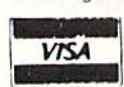
GALACTIC FRONTIER

Exciting space exploration game from the C64. Search for life forms among the 200 billion stars in our galaxy. Scientifically accurate. Awesome graphics! For the serious student of astronomy or the casual explorer who wants to boldly go where no man has gone before. Only \$29.95.

MONDAY MORNING MANAGER

Statistics-based baseball game. Includes 64 all-time great major league teams. Realistic strategy. Great sound & graphics! Apple II systems - \$44.95, C-64 & Atari systems - \$39.95.

Order with check, money order, VISA, MasterCard, COD. Free shipping & handling on US, Canadian, APO, FPO orders. COD & Foreign orders add \$4.00. Order from:



Free Spirit Software, Inc.
905 W. Hillgrove, Suite 6
LaGrange, IL 60525
(312) 352-7323



MAGIC

```
30 PRINT "{SHFT CLR}":SYS828 :REM*47
40 DATA 169,48,133,52,133,56,133,251,173,1
   4,220,41,254,141,14,220,165,1 :REM*208
50 DATA 41,251,133,1,169,0,133,250,133,252
   ,133,254,169,52,133,253,169,208 :REM*43
60 DATA 133,255,32,180,3,201,212,208,249,1
   69,56,133,251,169,60,133,253 :REM*53
70 DATA 169,216,133,255,32,180,3,201,220,2
   08,249,169,52,133,253,160,7,169 :REM*35
80 DATA 255,145,250,145,252,24,152,105,8,1
   68,192,7,208,241,230,251,230 :REM*132
90 DATA 253,165,253,201,56,208,231,165,1,9
   ,4,133,1,173,14,220,9,1,141,14 :REM*96
100 DATA 220,173,24,208,41,240,9,12,141,24
   ,208,96,160,0,177,254,145,252 :REM*16
110 DATA 145,250,200,208,247,230,251,230,2
   53,230,255,165,255,96 :REM*90
```

—JEFF MARTIN, ROSEVILLE, CA

\$473 CURING 1581 WOES

Some software, such as Fontmaster 128, fully supports Commodore's 3 1/2-inch 1581 disk drive, but most commercial C-128 software was written before the 1581 appeared. To use the 1581 with your C-128 software, set your 1581 to device 8 and your 1571 to device 9, using their respective DIP switches. (Don't attempt this with the C-128D's 1571—it comes without DIP switches. *Fie, Commodore!*)

Next, place your autoboot C-128 program disk in the 1571 and enter: SYS 65363,0,9,0. Your program will autoboot and communicate with the 1581, considered device 8 by the computer. True autobooting requires the auto-boot 128 utility that comes with the 1581. Use it to install an auto-boot to a file called Device 9 Boot on a formatted 3 1/2-inch disk.

Now type in:

10 POKE 7,9:SYS 65363

Save it to your auto-boot 1581 with the name DEVICE 9 BOOT. Put your program disk in the 1571 and reset the C-128, and your program will boot from the 1571. Incidentally, if you need to copy spreadsheet, database and word processing files to the 1581, try the Uni-Copy program included with the 1581. It copies VizaStar worksheet files, among others.

—JESSE SHERWOOD, MARTIN, TN

\$474 SCROLL CONTROL

Finally—a short routine that demonstrates a technique to prevent data from scrolling out of sight before you've read it. You'll find this routine is both easy to implement in any programs of your own design and works with the C-64 and with the C-128 in 40- and 80-Column modes.

When the routine is activated, tap the space bar to pause the output, and press it again to resume scrolling. To exit the program, press Q.

```
0 REM SCROLL CONTROL - CHRISTINE CHARNETSK
  I :REM*10
10 X=128:P$="SPACEBAR PAUSES":Q$="Q" = QUIT
   ":FOR I=1 TO X:PRINT I;P$,Q$ :REM*201
20 GETA$:IFA$(">") " OR A$="Q" THEN 40
   :REM*212 ▶
```


ACE

AMATEUR COMPUTING ENTHUSIAST

IF: THEN

IF you enjoy writing programs during your spare moments and dream of publishing someday: THEN why wait for someday, be an ACE programmer today!

USE=

programs written in a programming format that allows you to read them easier so you can...

LEARN

how other programmers have achieved the results you see on the screen and include them in yours.

SUBMIT=

your programs to ACE in the preferred programming format that you will receive and...

EARN

money based on the number of members at time of publication plus year end bonuses for future use.

STATUS NEWS

We've only just begun! For ACE to thrive as a club we hunger for program submissions and suggestions from our members. ACE will only be as good as the members that support it.

MEMBERSHIP

First time, full year membership fee is \$62.95 which will get you a disk package every month. The first one will be the "ACE Member Starter Package": which contains membership papers, submission forms, preferred program format plus a "Private Library" program which no enthusiastic programmer can do without.

TRIAL OFFER

Convince yourself! Send \$12.95 now to receive the "ACE Member Starter Package". Then after you find out what this club is all about, send the balance of the membership fee to become an ACE programmer. Use=Learn, Submit=Earn...

JOIN

Send your Name, Address and type of computer you use, plus check or money order for type of membership (Full \$62.95, Trial \$12.95) to:

ACE
P.O. Box F
Mukwonago, WI. 53149

ACE

Circle 191 on Reader Service card.

I Saved Time and Money with Physical Exam

I use a data base to keep records for our club. Last week I experienced read errors. Luckily I have a 1541 Physical Exam program. The alignment test confirmed what I had suspected, my drive was out of alignment. I am happy to report that I aligned my drive MYSELF. I avoided the wait for repair and paid a fraction of the cost.



Please specify
drive 1541,
1571, 8050,
8250, 4040, or
SFD 1001

Package includes: • True digital alignment disk with offset tracks. • Mechanical Stop Test • Speed test • Illustrated manual with instructions for performing alignment, adjusting speed and stop position. • Hard copy mode to print test results for future reference.

Physical Exam \$39.95 Plus S & H!

Cardinal Software, 14840 Build America Dr.,
Woodbridge, VA 22191 Info: (703) 491-6494

Orders: 800 762-5645

MAGIC

```
30 GETA$:IFA$<>" " AND A$<>"Q" THEN 30
:REM*131
40 IFA$="Q" THEN I=X
:REM*118
50 NEXT
:REM*180
```

—CHRISTINE N. CHARNETSKI, PLAINS, PA

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for C-128 mode only are not eligible for Trick of the Month.

If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

MEGA-MAGIC

Protect your 80-column monitor from screen burn.

BLANK-IT! 128

Last month's Mega-Magic featured Blank-it! 64, a utility that prevented screen burn from permanently ruining the display screen. For those readers who missed the January column, screen burn is a condition that results from a monitor screen being left on too long without a change in the display.

This column presents Gerald Elliot's 128 version of Blank-it!, which prevents screen burn on the C-128's 80-column screen. If no key press is made within ten minutes, the 80-column screen automatically blanks itself. Once the screen is blanked, pressing any key restores the screen to its original display.

To use Blank-it! 128, type in Listing 1, using RUN's Checksum program, and save it to disk before running it. It erases itself after you run it, so you must save the program before executing it. Also have a work disk in the drive, because the program writes a one-block machine language file to disk called Blank-it! 128 as soon as you run it.

Whenever you want to access the ML file, use the Boot command if you're using a 1571 disk drive, or the Bload command if you're using a 1541 or clone to boot it. Use this syntax for a 1571 boot:

BOOT"BLANK-IT 128" <return> ►

How Well Do You Know the 50 States?

RUN

THE COMMODORE 64/128 USER'S GUIDE

March 1988

An IDGC/I Publication

U.S.A. \$2.95

CANADA \$3.95

U.K. £2.00

Publish On Your 64

Discover the Newest
Software

Create a
Newsletter
With
GEOS

Plus:

- ▶ Home Inventory
- ▶ Commodore Lanes
- ▶ Screen Animator
- ▶ Timekeeper 128



MAGIC

Turn your Qwerty keyboard into a Dvorak layout; get a sharper, clearer picture with your 1902A; type in a high-speed, screen-scroll routine.

Compiled by TIM WALSH

\$475 BOTTOM-LINE PRINTER

Getting any character to print in the bottom right-most corner of your display without the screen scrolling is no small task. My trick takes care of that problem. To make the trick work in 80-Column mode, change 35 to 75 in line 20.

```
0 REM BOTTOM LINE PRINTER - JOSEPH CHARNET
SKI :REM*110
10 PRINT "{SHFT CLR}";:FOR I=1 TO 24:PRINT:NEXT
T :REM*43
20 FOR J=1 TO 35:PRINT "{SHFT C}";:NEXT :REM*9
30 PRINT "MAGC{CRSR LF}{SHFT INST}I{HOME}"
:REM*152
—JOSEPH CHARNETSKI, DALLAS, PA
```

\$476 BRILLIANT BORDERS 64

If you change the C-64's border colors fast enough, you'll get some eye-catching results. Here's an interrupt-driven program I call Brilliant Borders 64, which cycles the border colors 60 times a second without interfering with other programs. To adjust the color-cycle rate, enter POKE 56325, followed by a number between 0 and 255.

You can get even more dramatic effects to enhance menus and prompts by entering POKE 56325, 10.

```
0 REM BRILLIANT BORDERS 64 - NATHAN JOHNSON
N :REM*171
10 FOR I=1 TO 46:READ A:POKE 49151+I,A:NEXT
:REM*222 ▶
```

TRICK OF THE MONTH

\$477 64 HIGH-SPEED SCROLL

Regardless of whether you write spreadsheets or arcade programs, you can benefit from a high-speed screen-scroll routine that doesn't interfere with the operation of other programs.

As a horizontal screen scroll, 64 High-Speed Scroll lets you create animated title screens and menus. It uses the syntax, SYS 828,SC,C,L,D, where SC is the first screen line location (1024 to 2048) to be scrolled. Variable C represents the color memory location, L is the number of lines to be scroll-counted from the first line (1 to 25) and D is the direction of the scrolling effect.

Because it's a machine language routine, it offers rapid scrolling speed, and its location in memory doesn't interfere with the operation of Basic programs. Just give the program and its accompanying demo a try, and we think you'll find it one of the fastest-scrolling routines you've seen for the C-64.

```
0 REM 64 SCROLL ROUTINE - BRET TIMMINS
:REM*63
10 FORT=828 TO 980:READD:POKET,D:C=C+D:NEXT
T :REM*68
20 IFC<>22315 THEN PRINT "ERROR IN DATA STATE
MENTS":END :REM*11
30 PRINT "FORMAT:SYS 828,SC,C,L,D" :REM*33
40 DATA 32,203,3,132,251,133,252,32,203,3,
132,253,133,254,32,203,3 :REM*3
50 DATA 140,171,2,32,203,3,140,172,2,173,1
72,2,240,44,162,0,160 :REM*59
60 DATA 0,177,251,72,177,253,72,200,177,25
```

```
3,72,177,251,136,145,251,104 :REM*161
70 DATA 145,253,200,192,40,208,239,136,104
,145,253,104,145,251,32,177,3 :REM*123
80 DATA 232,236,171,2,208,215,96,162,0,160
,39,177,253,72,177,251,72 :REM*120
90 DATA 136,177,253,72,177,251,200,145,251
,104,145,253,136,16,241,200,104 :REM*207
100 DATA 145,251,104,145,253,32,177,3,232,
236,171,2,208,217,96,24,165 :REM*222
110 DATA 251,105,40,133,251,165,252,105,0,
133,252,165,253,105,40,133,253 :REM*151
120 DATA 165,254,105,0,133,254,96,32,253,1
74,32,138,173,32,247,183,96 :REM*118
```

```
0 REM SCROLL DEMO - BRET TIMMINS :REM*36
10 POKE 53281,0:PRINT CHR$(147); :REM*240
20 FORT=0 TO 11:PRINT CHR$(158);"TRY TO KEE
P YOUR EYE ON THIS{2 SPACES}" :REM*27
30 PRINT CHR$(30);"SCROLLING DEMONSTRATION.
{2 SPACES}GOOD LUCK! ":NEXT :REM*137
40 R=INT(RND(0)*23):RD=INT(RND(0)*2)
:REM*137
50 SC=1024+40*R:C=SC+54272:L=1:D=RD
:REM*161
60 FORT=0 TO 39 :REM*58
70 SYS 828,SC,C,L,D:SYS 828,SC+40,C+40,L,ABS
(1-D) :REM*137
80 NEXT:GOTO 40 :REM*165
```

—BRET M. TIMMINS, SANDY, UT

MAGIC

```
20 DATA 173,20,3,141,0,193,173,21,3,141,1,
193,120,169,192,141,21,3,169,40 :REM*84
30 DATA 141,20,3,88,96,120,173,0,193,141,2
0,3,173,1,193,141,21,3,88,96,238
```

:REM*139

```
40 DATA 32,208,108,0,193 :REM*10
```

—NATHAN JOHNSON, BRIER, WA

\$478 A BETTER WAY TO SAVE

Like any good programmer, I periodically save whatever program I'm working on. Of course, the 1541 and early 1571s suffered from a Save with Replace bug, which means that if you're a C-64 user, you avoid the SAVE "@0:filename",8 syntax at all costs. So, rather than perform the time-consuming task of scratching and then saving a file, I save the file each time as "filename 1.0", "filename 1.1", "filename 1.2", and so forth.

If I make a major revision, I save the file with a higher number, such as "filename 3.0", to distinguish it from earlier versions. When the program is complete, I save it as "filename". I then enter: LOAD "\$filename???",8. Next, I list the directory. If I want to delete all those earlier versions, I enter:

```
OPEN 15,8,15,"S0:filename???":CLOSE 15
```

My disk is then cleared of all the earlier, unfinished versions, with, of course, the finished version preserved.

—MICHAEL ROSS, LYNCHBURG, VA

\$479 TABLES WRITE PROTECTION

Who says you need a write-protect tab to keep your disks write-protected? My program, Tableless Write Protection, does the same thing on both the C-128 and C-64, without those sticky little annoyances.

```
0 REM TABLES WRITE PROTECT - JOSEPH CHARN
ETSKI :REM*65
10 PRINT "{SHIFT CLR}WRITE PROTECTOR":INPUT"
{CRSR DN}0=OFF 1=ON ";P$:N=65:IFP$="1"
T HENN=80 :REM*233
20 OPEN 1,8,15,"I0:":OPEN 3,8,3,"#":PRINT#1,
"U1"3;0;18;0 :REM*13
30 FOR L=2 TO 166 STEP 164:PRINT#1,"B-P"3;L:
PRINT#3,CHR$(N);:NEXT :REM*237
40 IF N=65 THEN FORM=1 TO 2:PRINT#1,"M-W"CHR$
(M)CHR$(M-5*(M>1))CHR$(1)CHR$(N):NEXT
:REM*52
50 PRINT#1,"U2"3;0;18;0:CLOSE 3:PRINT#1,"UJ
":FOR Z=1 TO 1000:NEXT:CLOSE 1 :REM*210
```

—JOSEPH CHARNETSKI, DALLAS, PA

\$47A TWINKLE, TWINKLE, LITTLE TAB 64

It should come as no surprise to anyone that the C-64's Basic 2.0 doesn't provide a vertical tab command for vertically positioning the cursor on the screen. I've written Tabs with a Twinkle 64 to provide that much-needed vertical tab command and an optional horizontal tab command. The program returns a Syntax error when maximum values are exceeded. The command's syntax appears as:

```
SYS VT, ROW, (COLUMN)
```

where the horizontal column is optional. While 49152 is the default address, the code is relocatable to other locations.

Tabs with a Twinkle 64 earned its name because it also contains a sample program that places twinkling stars around the screen.

```
0 REM TABS WITH A TWINKLE 64 - FRANK VAN D
EVENTER :REM*240
10 REM FORMAT: SYS VT,ROW [,COLUMN]:ROW =
0 TO 24: COLUMN = 0 TO 39 (OPTIONAL) :REM*9
20 VT=49152 :REM*55
30 FOR X=0 TO 45:READA:POKEVT+X,A:NEXT:REM*68
40 DATA 169,1,133,190,32,253,174,32,158,17
3,32,170,177,198,190,48,13,132 :REM*211
50 DATA 191,32,121,0,240,4,201,58,208,232,
160,0,192,40,176,9,166,191,224 :REM*108
60 DATA 25,176,3,76,240,255,76,8,175 :REM*191
100 N=4:REM TWINKLE DEMO - TRY CHANGING TH
E VALUE OF N :REM*98
110 X=RND(-TI):PRINT "{SHIFT CLR}{CTRL 2}":P
OKE53280,0:POKE53281,0 :REM*108
120 DIM P$(N):P$(0)="*":FOR X=1 TO N:P$(X)="
{9 CRSR RTS} {9 CRSR RTS} {9 CRSR RTS}
":NEXT :REM*246
130 A=23:B=40:FOR X=1 TO 2 STEP 0 :REM*32
140 SYS VT,RND(X)*A+X,RND(X)*B :REM*149
150 PRINT P$(RND(X)*N); :REM*217
160 NEXT :REM*35
```

—FRANK VAN DEVENTER, GROSSE POINTE FARMS, MI

\$47B TABS WITH A TWINKLE 128

No, C-128 owners, you weren't forgotten. Like the C-64, Basic 7.0 on the C-128 also lacks a vertical tab command. Implementing a C-128 Tabs with a Twinkle is much easier because no machine language routines are necessary.

The program is the same as above, except line 20 has been changed to VT=DEC("FFF0"), lines 30 through 60 have been deleted and P\$(X) now equals "".

Use a value of 39 for B in line 130 for 40-Column mode, and if you're using 80-Column mode, change it to 79.

```
0 REM TABS WITH A TWINKLE 128 - FRANK VAN
DEVENTER :REM*216
10 REM FORMAT: SYS VT,ROW [,COLUMN]:ROW =
0 TO 24: COLUMN = 0 TO 39 (OPTIONAL) :REM*9
20 VT=DEC("FFF0") :REM*193
100 N= 4:REM TWINKLE DEMO - TRY CHANGING T
HE VALUE OF N :REM*98
110 X=RND(-TI):PRINT "{SHIFT CLR}{CTRL 2}":P
OKE53280,0:POKE53281,0 :REM*108
120 DIM P$(N):P$(0)="*":FOR X=1 TO N:P$(X)="
":NEXT :REM*134
130 A=23:B=39:FOR X=1 TO 2 STEP 0:REM USE B=7
9 FOR 80 COLUMN MODE :REM*180
140 SYS VT,0,RND(X)*A+X,RND(X)*B :REM*57
150 PRINT P$(RND(X)*N); :REM*217
160 NEXT :REM*35
```

—FRANK VAN DEVENTER, GROSSE POINTE FARMS, MI ►

\$47C DVORAK KEYBOARD 64

Nearly every home computer keyboard uses the Qwerty key configuration, which is inconvenient for those accustomed to typing with a Dvorak keyboard. Dvorak Keyboard 64 alters your C-64 keyboard to the Dvorak configuration.

Pressing run-stop/restore brings back the standard Qwerty keyboard. To re-enable the Dvorak keyboard after pressing run-stop/restore, enter POKE 1,53. Even if you're not a Dvorak-keyboard user, give my program a try. Who knows, you might prefer it to the Qwerty configuration!

```
0 REM C-64 DVORAK KEYBOARD - RICHARD PENN
                                :REM*46
10 A=88:B=255:C=56334:D=65535:POKE1,55:POK
    EC,PEEK(C)AND(B-1)          :REM*84
20 POKE A+7,0:POKEA+8,160:POKEA+2,B:POKEA+
    3,B:POKEA,B:POKEA+1,B:SYS41919 :REM*227
30 POKED,PEEK(D):POKEC,PEEK(C)OR1:POKEC-9,
    56:POKE1,53                 :REM*30
40 FOR T=60289 TO 60352:READD:POKET,D:CK=CK
    +D:NEXT                      :REM*12
50 IF CK <> 3990 THEN PRINT "ERROR IN DATA.":
    END                          :REM*154
60 PRINTCHR$(147):PRINTTAB(9)"/ , . P Y F
    G C R L ; =":PRINT          :REM*77
70 PRINTTAB(9)"A O E U I D H T N S -":PRIN
    T:PRINTTAB(9)" ' Q J K X B M W V Z"
                                :REM*105
80 DATA 20,13,29,136,133,134,135,17,51,44,
    65,52,39,79,46,1,53,80,69,54 :REM*91
90 DATA 74,85,89,81,55,70,73,56,88,68,71,7
    5,57,67,72,48,77,84,82,66,43,76:REM*153
100 DATA 78,45,86,83,59,87,92,61,45,19,1,6
    1,94,90,49,95,4,50,32,2,47,3 :REM*16
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$47D EFFECTIVE JOYSTICK

Surprisingly, short and effective joystick routines written in machine language for the C-64 are few and far between. My All-Purpose 64 Joystick routine provides programmers with a byte-size program that can be easily implemented into games and other programs.

Summoned with SYS 830, the All-Purpose 64 Joystick routine scans computer location 900 until a value ranging from 1 to 5 is detected, indicating either that the joystick was moved or the fire-button was pressed.

To help illustrate the effectiveness of the joystick routine, I included a short game (use a joystick in port 2) for you to fill in the entire screen with blocks of reversed space characters. It's frustrating, because the block tends to disappear as the screen becomes filled, and fun, as you try to beat your best time. When you've either filled in the screen or given up, press the fire-button to clear the screen and start again.

```
0 REM 64 JOYSTICK CONTROL - JAMES MCCONNELL
    L                            :REM*211
10 PRINT "{SHIFT CLR}":POKE53281,1:POKE53280
    ,1:X=20:Y=13:Z=1024:A=160:B=40:C=32:GOS
    UB800                        :REM*125
20 POKEZ+X+B*Y,A                :REM*56
30 SYS830: ON PEEK(900) GOTO 50,60,80,100,
    120                          :REM*10
```

```
40 GOTO20                        :REM*164
50 POKE53281,INT(RND(1)*12)+1:POKE53280,IN
    T(RND(1)*14)+1:PRINTCHR$(147):GOTO 20
                                :REM*165
60 Y=Y+1:IFY>24 THEN Y=24       :REM*11
70 GOTO20                        :REM*194
80 X=X-1:IFX<. THEN X=.         :REM*189
90 GOTO20                        :REM*214
100 Y=Y-1:IFY<. THEN Y=.        :REM*145
110 GOTO20                       :REM*234
120 X=X+1:IF X>39 THEN X=39     :REM*55
130 GOTO20                       :REM*254
800 FOR I=830 TO 890: READD:POKEI,D:NEXT:RE
    TURN                        :REM*55
810 DATA 169,0,141,132,3,173,0,220,41,31,2
    01,15,240,17,201,29,240,19,201,27,240
                                :REM*71
820 DATA 21,201,30,240,23,201,23,240,25,96
    ,169,1,141,132,3,96,169,2,141,132,3
                                :REM*40
830 DATA 96,169,3,141,132,3,96,169,4,141,1
    32,3,96,169,5,141,132,3,96 :REM*63
```

—JAMES F. MCCONNELL, MARATHON, NY

\$47E CLR-BOTTOM KEY

Like many Commodore users, I've often wished there was a key with an effect like that of the clr-home key, except moving the cursor to the bottom of the screen, rather than to the top. Then, when I want to list a program, the first 25 lines would scroll by slowly while I hold down the control key, instead of scrolling by quickly to fill the screen.

My desire for such a key resulted in Clear-Bottom Key, a short C-64 program written entirely in machine language. After you load and run this program, pressing the F1 key instantly moves the cursor to the lower-left corner of the screen while leaving the screen display undisturbed.

Should you want to move the cursor to that same location and clear the screen in the process, simply press F3. The program is designed to be run before you begin programming, so you'll be able to access it at any time.

```
0 REM 64 CLEAR TO BOTTOM - KENNY LAWSON
                                :REM*72
10 SA=679:FORX=SA TO SA+39:READA:CK=CK+A:P
    OKE X,A:NEXT                 :REM*226
20 IF CK<>4369 THEN PRINT "ERROR IN DATA":END
                                :REM*38
30 SYSSA:PRINTCHR$(147)"F1 - MOVES CURSOR
    TO BOTTOM"                   :REM*244
35 PRINT "F3 - CLEARS & MOVES CURSOR TO BOT
    TOM"                         :REM*66
40 DATA 120,169,180,141,20,3,169,2,141,21,
    3,88,96,165,203,201,4,240,10,201:REM*65
50 DATA 5,240,3,76,49,234,32,68,229,24,162
    ,24,160,0,32,240,255,76,49,234 :REM*139
```

—KENNY LAWSON, INDIANAPOLIS, IN

\$47F FASTER HIGH-TO-LOW BYTE

As most programmers and programmers-to-be already know, many C-64 and C-128 programs use algorithms re-

Continued on p. 20.

MAGIC

the document and manually remove them. To remove the PRG-, SEQ- or USR-file identifiers following each filename, use RUN Script's Search with Replace feature: Press F4 twice in rapid succession and, at the Search for? prompt, enter "prg", "seq" or "usr" (note the space in front of each file identifier). Then press return at the Replace with? prompt. This exercise in Search with Replace instantly removes the identifier from each filename.

Now, position your cursor after each filename and enter any notes pertaining to the file, such as whether it is a program, one of RUN's Magic tricks, or a word processing, spreadsheet or database file.

At this point, remove the Blocks Free statement at the end of the directory and save this list of filenames to disk. Finally, you should print out a copy to keep with the disk. Place your printer into Compressed mode (137 characters per inch) and place the command.pw137 at the beginning of the document. Keeping the printout compressed in this manner allows all but the longest of file notes to occupy only one line each. Slip the printout into the disk protector along with the disk for safe keeping and future reference. There you have it; a complete, easy-to-use disk cataloger!

—TIM WALSH, RUN STAFF

\$484 RUN's CHECKSUM ENHANCEMENT

I've developed a modification to RUN's Checksum program that prints the checksum number in the upper left-hand corner (home position) of the screen. This works in 64 mode and in 128 mode on both 40- and 80-column screens. Moreover, the current cursor location is restored after the checksum is printed to the screen, so your cursor is right where it should be to enter the next line of the program listing.

Just add lines 31-33 and 180-190 to the original RUN's Checksum listing, and be sure to save it to disk before running.

```
Ø REM CHECKSUM IN HOME POSITION - BOB KODA
DEK                                     :REM*2Ø5
31 FOR P=I TO I+28:READ BY:CS=CS+BY:POKE S
   A+P,BY:NEXT                         :REM*3Ø
32 IF CS<>37ØØ THEN PRINT"DATA ERROR IN LI
   NES 18Ø-19Ø":END                   :REM*67
33 POKE SA+11Ø,24Ø:POKE SA+111,38:POKE SA+
   14Ø,234                             :REM*222
18Ø DATA 1Ø4,17Ø,24,32,24Ø,255,1Ø4,168,96,
   56,32,24Ø,255,138,72,152,72       :REM*16
19Ø DATA 24,162,Ø,16Ø,Ø,32,24Ø,255,169,42,
   2Ø8,198                             :REM*212
```

—BOB KODADEK, ASTON, PA ■

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for C-128 mode only are not eligible for Trick of the Month.

If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

MEGA-MAGIC

Make your menu displays and introductions light up the screen.

DISPLAY FRAME ANIMATION

Become the envy of budding and experienced programmers alike with this title animation program. By rapidly cycling through a series of character colors, Display Frame Animation makes your menus and introductions come alive with neon screen animation rarely seen outside of commercial entertainment software.

As written, Display Frame Animation displays a default greeting, but you can substitute your own words in variable FL\$(x), where x is the number of lines down from the top of the display title.

While the default colors in line 60060 already create a colorful animated border, you can substitute red, orange and yellow to produce a glowing neon effect. To increase or decrease the speed of color cycling, change the value of FZ in line 60230.

Once you've typed in Display Frame Animation and saved it to disk, you can add it as a subroutine to your own

programs. Just follow these steps:

1. Load your program into the computer.
2. In Direct mode, type:

```
L = PEEK(45) + PEEK(46)*256 - 2:POKE44,L:256:POKE43,
L - PEEK(44)*256 <return>
```

3. Now load Display Frame Animation and enter:

```
POKE43,1:POKE44,8 <return>
```

4. Finally, remove the REM in front of the Return statement in line 60250. [R]

—JOSEPH R. CHARNETSKI, DALLAS, PA

Listing 1. Display Frame Animation program.

```
6ØØØØØ REM 64/128 TITLE ANIMATOR - JOE CHAR
NETSKI                                     :REM*8 ▶
```


RUN

THE **COMMODORE** 64/128 USER'S GUIDE

April 1988
An IDGC/I Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

Join a User's Group

Boost Your Computing Know-How



What's New at CES?

Add New Fonts to Your 64

Create Windows the Easy Way!



MAGIC

Test your typing speed and accuracy with 64 Typing Tutor;
redefine your 128 function keys for easy Data statement entry
with RUN's Checksum program.

Compiled by TIM WALSH

\$485 TYPING HEX LISTINGS MADE EASIER

RUN has published several high-quality machine language programs (RUN Term 128, RUN Memo Book and RUN Copy) so far in 1988. Since their listings use a hexadecimal (base 16) format in the Data statements, you're required to enter numbers and the letters A through F. I've written a short C-128 program that redefines the C-128 function keys for easier data entry. Incidentally, there's no problem entering 64-mode programs in 128 mode using RUN's Checksum.

Here's a list of the new function-key definitions:

F1=A	F5=C
F2=E	F6=DATA
F3=B	F7=D
F4=F	F8=, (comma)

I tested a variety of key assignments to determine which order is easiest to use. If pressing the shift/F8 combination is a little awkward for you, you could use the comma key with your left hand.

```
Ø REM REDEFINE C-128 F-KEYS - T. WALSH
                                :REM*116
1Ø FORS= 1 TO 8:READ KY$:KEY(S),KY$:NEXT
                                :REM*219
2Ø DATA A,E,B,F,C,"",D,DATA  :REM*72
```

```
3Ø SCNCLR:PRINT"FUNCTION KEYS ARE REDEFINE
D!
                                :REM*151
```

—TIM WALSH, RUN STAFF

\$486 ELIMINATING SCREEN JITTERS

If you stack your computer system's peripheral devices on shelves around your work area, you may be asking for electrical interference trouble. If a corner of the image on your video monitor begins to flicker, your disk drive or printer may be the culprit. Keeping the drive or printer on a shelf in close proximity to the monitor sometimes causes interference due to lack of shielding, especially if those units are non-U.S. specification devices.

Try turning off the disk drive and printer while leaving the rest of the system on. If the flickering disappears, try moving these peripheral devices away from the video monitor. Sometimes just relocating them a few inches is all that's necessary.

—ERIC PEDERSEN, WILSTEAD, ENGLAND

\$488 ELIMINATING DISK DRIVE JITTERS

Like any proud owner, I'm thrilled by my new C-128D. What I wasn't so thrilled about was the fact that the drive heads clatter a little each time I power up the machine in C-128 ▶

TRICK OF THE MONTH

\$487 TYPING TUTOR

Whether you're a touch or peek-and-poke typist, you'll find 64 Typing Tutor is guaranteed to improve your typing speed and accuracy. Best of all, you can run it in 64 mode or in 128 40- or 80-Column mode.

Typing Tutor 64 displays a random alpha or numeric character at the top of the screen, then moves it down at a user-selectable speed between 1 and 9. You accumulate points by pressing the corresponding key before the character reaches the bottom of the screen.

```
Ø REM 64 & 128 TYPING TUTOR - JOE CHARNET
SKI
                                :REM*177
1Ø PRINT"{SHFT CLR}1. LETTERS{2 SPACES}2.
  NUMBERS{2 SPACES}3. BOTH{3 SPACES}";
  GOSUB9Ø:IFA$<"1"ORA$>"3"THEN1Ø:REM*218
2Ø L=57+1Ø*(A$="1"):H=65-26*(A$="2"):X=RN
  D(-TI)
                                :REM*241
3Ø PRINT"{CRSR DN}SPEED (1-9){CRSR RT}";
  GOSUB9Ø:S=VAL(A$):ON-(S<1ORS>9)GOTO3Ø:
  S=S*11:GOSUB1ØØ
                                :REM*175
```

```
4Ø R=INT(RND(1)*43)+48:ON-(R>LANDR<H)GOTO
  4Ø:P$=CHR$(R):T=INT(RND(1)*38)+1:D=1
                                :REM*33
5Ø PRINTTAB(T)"{CRSR DN}{CRSR LF}"P$"{CRS
  R UP}":GETC$:IFC$=P$THENSEC=SC+1:GOSUB1
  ØØ:GOTO4Ø
                                :REM*24
6Ø FORZ=STO1ØØ:NEXT:D=D+1:ON-(D<24)GOTO5Ø
  :GOSUB1ØØ:FORB=1TO1Ø:GETK$:NEXT
                                :REM*197
7Ø PRINT"{CRSR DN}PRESS SPACE BAR TO CONT
  INUE.":GOSUB 9Ø:IFA$<>" "THENPRINT"{SH
  FT CLR}":END
                                :REM*247
8Ø SC=Ø:GOSUB1ØØ:GOTO4Ø
                                :REM*228
9Ø GETA$:ON-(A$="")GOTO9Ø:PRINTA$:RETURN
                                :REM*98
1ØØ PRINTCHR$(147)"SCORE="SC:FORZ=STO2ØØ:
  NEXT:RETURN
                                :REM*239
```

—JOE CHARNETSKI, DALLAS, PA

MAGIC

mode. This situation is not a defect in hardware design; instead, the drive is simply trying to determine whether an autoboot disk is present in the drive. When a disk isn't in the drive, though, that clattering sounds expensive to my ears.

Not wanting to have to pay for a premature disk drive alignment, I've developed a sure-fire way to silence the drive whenever the computer is powered up. I simply keep a work disk in the drive when I turn on the computer. Result: No rattles, clatters or any other sound for that matter.

[Editor's Note: If you have a standard C-128 and are experiencing the same problems as Keith, simply turn your computer on first, then your disk drive. By making this practice a habit, your disk drive might last long enough for your grandchildren to inherit it in working order.]

—KEITH SILLS, NEW YORK, NY

\$489 ESC-A AND ESC-C ON THE C-128

I'm a happily unemployed skier, and when I'm not on the slopes, I tend to sit around the house and write lots of Basic programs on my C-128. Sprites, music, games—I even type in most of *RUN's* Magic tricks. I enjoy writing programs of my own design so much that I rarely work on less than five or six at a time.

A trick I discovered is always to press ESC-A to put the C-128 in Insert mode before writing programs or typing in listings. By keeping the C-128 in Insert mode, I never have to worry about inserting spaces if I forget to enter a character or word into an existing line—the characters are automatically shoved over. Also, the listing scrolls much slower when I want to closely examine the lines I've typed in. Furthermore, whenever I need to cancel ESC-A without cancelling the Fast mode, I just press ESC-C. Try it the next time you type in a listing. You'll find yourself using Insert mode constantly.

—HANS K. WEIZERSTEIN, VIENNA, AUSTRIA

\$48A @PRINT FOR THE 64

Just when you think every conceivable interrupt-driven program has been developed for the C-64, along comes another that makes you wonder why it wasn't thought of before. My little program adds an `@Print` command to Basic 2.0.

After running my program, enter SYS 880 to activate it. Now, when you want to direct output to the printer, enter:

@PRINT"HERE IS A SAMPLE OF @PRINT"

Or, if you prefer,

@?"HERE IS A SAMPLE OF @PRINT"

While it is not required for normal use with the `@Print` command, pressing the `&` (ampersand) key closes logical file #4 that the `@` sign automatically opens.

```

0 REM @PRINT FOR THE 64 - RANDY PENCIN
                                :REM*34
10 FORX=828 TO 915:READD:POKEX,D:CK=CK+D:N
EXT                                :REM*102
20 IFCK<>8933THENPRINT"ERROR IN DATA..."
                                :REM*107
30 PRINT"SYS 880 TO ACTIVATE":PRINT"SYS 93
0 TO DEACTIVATE"
                                :REM*21
40 DATA 160,1,177,122,201,64,240,7,201,38,
240,31,108,160,3,32,115,0,169
                                :REM*26
50 DATA 0,32,189,255,169,1,162,4,160,255,3
2,186,255,32,192,255,162,1
                                :REM*161

```

```

60 DATA 32,201,255,108,160,3,32,115,0,32,2
   04,255,108,160,3,173,8,3          :REM*251
70 DATA 141,160,3,173,9,3,141,161,3,169,60
   ,141,8,3,169,3,141,9,3,96         :REM*194
80 DATA 173,160,3,141,8,3,173,161,3,141,9,
   3,96                                :REM*115

```

—RANDY PENCIN, WOODLAND, CA

\$48B 64 HEARTS A-PLenty

Don't wait for next Valentine's day to show that special someone in your life your true feelings. Just sit her down in front of the computer, run this program and tell her this is how your heart behaves whenever the two of you are together.

```

0 REM 64 HEARTS A-PLenty - JASON MUCKALA
                                :REM*90
10 PRINTCHR$(147):C=53280:POKEC,0:POKEC+1,
   0:V=C-32:POKEV+21,4:POKEV+41,2 :REM*155
20 POKE 2042,13:FORS=0 TO 62:READD:POKE 83
   2+S,D:NEXT :REM*197
30 D=INT(RND(1)*255):POKE V+4,D:POKE V+5,D
   :POKE V+41,D:GOTO 30 :REM*100
40 DATA 0,0,0,0,0,0,0,0,0,0,0,0,7,131,192,
   15,199,224,31,239,240,31 :REM*244
50 DATA 255,240,31,255,240,31,255,240,15,2
   55,224,7,255,192,3,255,128 :REM*120
60 DATA 1,255,0,0,254,0,124,0,0,56,0,0,1
   6,0,0,0,0,0,0,0,0,0,0,0 :REM*192

```

—JASON MUCKALA, WEST COVINA, CA

\$48C ME AND MY SHADOW— ER, HIGHLIGHTER

Here's a dynamic twist to assist in editing C-64 Basic programs—a Basic line highlighter. Wherever you move the cursor, the highlighter follows. You'll notice a vast improvement in your ability to keep track of which line the cursor is on.

Should you want to change the default colors, use these Pokes with Line Highlighter:

Cursor: POKE 53024,X
Bar: POKE 53029,X
Screen: POKE 53036,X

```

0 REM 64 BAR HIGHLIGHTER - THOMAS IERNA
:REM*200
10 FOR T=52992 TO 53054: READD:POKET,D:NEX
T
:REM*53
20 SYS 52992:PRINTCHR$(147):LIST
:REM*92
30 DATA 120,169,13,141,20,3,169,207,141,21
,3,88,96,165,214,101,214,101
:REM*204
40 DATA 214,101,214,101,214,101,214,101,21
4,101,214,105,49,160,12,140
:REM*204
50 DATA 134,2,160,1,32,51,207,105,10,160,0
,32,51,207,76,49,234,205,18
:REM*72
60 DATA 208,208,251,140,32,208,140,33,208,
96
:REM*242

```

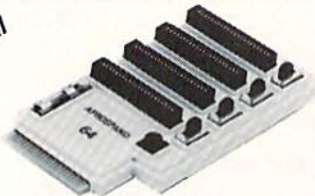
—THOMAS IERNA, TIERRA VERDE, FL
Continued on p. 90.

PRICE & QUALITY

YOU CAN DEMAND IT FROM OTHERS—
BUT YOU CAN EXPECT IT FROM APROTEK

Aprospand-64™ Gives your Commodore 64 or 128 full expandability! This superbly designed expansion module plugs into the expansion port and gives you four switchable (single or in any combination) expansion connectors—plus fuse protection—plus a reset button! Before you buy an expander, be sure that it has a fuse to protect your computer and that you can activate your cartridges in any combination allowed by the cartridges.

The
Original



Fully
C-128
Compatible

ONLY \$29.95 + S&H

Order #5064

UNIVERSAL RS-232 INTERFACE

with Commodore USER Port expansion. ONLY \$39.95 + S&H

Now you can connect and communicate with any of the popular RS-232 peripherals using your Commodore USER Port. This superb expander opens a whole new world to your Commodore computer's capabilities. You can now connect to printers, modems and any other RS-232 device. If you already have something that connects



to the USER Port, don't worry because the port is duplicated on the outside edge of the interface. Simply plug it in and turn on the device you want to communicate with. Comes complete with sample driver program listings. Compatible with all Commodore home computers with a USER port. 1-year warranty. Order #5232.

NEW! "COM-MODEM" ADAPTER — Use any Hayes® compatible modem with DB-25 connector through your USER port. You can make it emulate a 1670 too, or turn it off entirely. Can be used with our other USER port equipment such as "USER EXTENDER" (#5250) or "UNIVERSAL RS-232 INTERFACE" (#5232).

Order #5100 \$18.95 + S&H

"EXTENDER-64" — 10" Ribbon cable extender for your Commodore CARTRIDGE port. Used with Aprospand-64.

Order #5065 \$19.95 + S&H

"USER EXTENDER" — 10" Ribbon cable extender for your Commodore USER port.

Order #5250 \$21.95 + S&H

Commodore Interfaces and Cables

Cardprint G-WIZ Printer Interface #1108	\$39.95
Commodore 6 Pin Serial Cable (5 ft) #3006-5MM	\$ 7.95
Commodore 6 Pin Serial Cable (8ft) #3006-8MM	\$ 9.95
Commodore Serial Ext. (5 ft) #3006-5MF \$7.95, (8 ft) #3006-8MF	\$ 9.95
Amiga Printer Cable (6 ft) #3040-6MF, \$12.95, (10 ft) #3040-10MF	\$16.95
Centronics Parallel (6 ft) #3036-6MM, \$12.95, (10 ft) #3036-10MM	\$14.95

Shipping per each above item: Cont. US = \$3. Can, PR, HI, AK, APO, UPS Blue = \$6

ORDER INFORMATION California residents add 6% tax. All prices are cash prices—VISA and MC add 3% to total. We ship the next business day on money orders, cashier's checks, and charge cards. A 14-day clearing period is required for checks. Prices and availability subject to change—CALL. Available at Selected Dealers. Dealer inquiries invited. 2 week satisfaction or your money back trial period on all products.

For information and in Calif. call 805/987-2454 (8-5 PST)
TO ORDER CALL TOLL FREE

1 (800) 962-5800 - USA (7-6 PST)

Or send order to:



APROTEK

Dept. RN
1071-A Avenida Acaso
Camarillo, CA 93010

MAGIC

From p. 12.

\$48D New 64 DEFAULTS

Some C-64 commercial programs have built-in default screen colors that appear after pressing run-stop/restore (a soft reset). This means that the colors won't be the usual blue screen and border; instead, the colors will be those the programmer decided to use.

You can create the same type of color control by using my program, New 64 Defaults, which lets you decide which screen colors will appear after performing a soft reset. After running my program, you'll be prompted to enter the screen, border and character colors. After you've set them, they become permanent until the computer is turned off or the reset button (C-128) is pressed. Pressing run-stop/restore clears the screen and leaves the colors unchanged.

```

Ø REM DEFAULT C-64 COLORS OF CHOICE - PETE
  R LOTTRUP                                :REM*88
1Ø FORI= 828 TO 868:READD:POKEI,D:CK=CK+D:
  NEXT                                     :REM*173
2Ø IFCK<>4161 THEN PRINT"ERROR IN DATA..":
  END                                     :REM*185
3Ø DATA 173,2,3,141,1Ø1,3,173,3,3,141,1Ø2,
  3,169,83,141,2,3,169,3                 :REM*6
4Ø DATA 141,3,3,96,165,25Ø,141,32,2Ø8,165,
  251,141,33,2Ø8,165,252,141           :REM*84
5Ø DATA 134,2,1Ø8,1Ø1,3                 :REM*44
8Ø PRINTCHR$(147)"ENTER BORDER COLOR (Ø-15
  )":INPUTA                               :REM*213
9Ø PRINT"ENTER BACKGROUND COLOR (Ø-15)":IN
  PUTB                                    :REM*41
1ØØ PRINT"ENTER CHARACTER COLOR (Ø-15)":IN
  PUTC                                    :REM*14Ø
11Ø T=25Ø:POKE T,A:POKET+1,B:POKET+2,C:SYS
  828                                     :REM*28
  
```

—PETER M. L. LOTTRUP, BUENOS AIRES, ARGENTINA

\$48E FIVE-CHARACTER DISK IDS

Commodore disk drives limit you to a two-character identification number when you format a disk, which is fine unless you want to catalog several hundred or several thousand disks all using unique ID characters. Wouldn't it be nice to have IDs of three, four, or even five characters on your disks?

Well, my program, Five-Character ID, does just that—lets you create disks with five-character IDs. It runs in both 64 and 128 modes and is intended to be used on previously formatted disks. A note of caution, though: Be sure you have a back-up copy of the disk whose ID you are modifying. Because you're altering the ID, there is a slight chance that a disk error could occur, especially on older disks.

```

Ø REM 5-CHARACTER ID MAKER - JACOB M. SMIT
  H                                       :REM*2ØØ
1Ø PRINT"CURRENT DISK ID =";           :REM*194
2Ø OPEN15,8,15:OPEN5,8,5,"#":PRINT#15,"U1"
  ;5;Ø;18;Ø                             :REM*246
3Ø FOR T=16Ø TO 166:PRINT#15,"B-P";5;T:GET#
  5,A$:PRINTA$;:NEXT:PRINT              :REM*158
4Ø PRINT"ENTER ID UP TO 5 CHARACTERS"
                                           :REM*154
5Ø INPUT ID$:ID$="{2 SPACES}" + ID$ :REM*2ØØ
6Ø IFLEN(ID$)<7THENID$=ID$+" ":GOTO6Ø
  
```


MAGIC

```

:REM*190
70 ID$=LEFT$(ID$,7) :REM*147
80 FORT=160 TO 166:PRINT#15,"B-P";5;T:PRIN
T#5,MID$(ID$,T-159,1);:NEXT :REM*45
90 PRINT#15,"U2";5;0;18;0 :REM*92
100 CLOSE5:PRINT#15,"I":CLOSE15:PRINT"ALL
DONE!" :REM*69

```

—JACOB M. SMITH, SILVER CREEK, NY

\$48F A BETTER C-64 CTRL-G

Upon seeing Magic Trick \$467 (January 1988), I felt obligated to uphold my civic duty to fellow computerists everywhere and improve upon it. Behold: CTRL-G 64 Improved. Now it's in the form of an interrupt-driven routine residing at memory location 49152; all you have to do is type it in, save it and then run it. Then, whenever you feel a need to "ring your bell," turn up the volume on your monitor and press CTRL-G.

```

0 REM A BETTER C-64 CTRL-G - ROBERT PAGANO
:REM*165
10 FORT= 49152 TO 49211:READ A: POKE T,A:N
EXT:SYS49152 :REM*118
20 DATA 120,169,13,141,20,3,169,192,141,21
,3,88,96,174,203,0,172,141,2 :REM*88
30 DATA 224,26,208,34,192,4,208,30,169,21,
141,24,212,169,9,141,5,212 :REM*36
40 DATA 169,0,141,6,212,169,48,141,1,212,1
69,32,141,4,212,169,33,141 :REM*35
50 DATA 4,212,76,49,234 :REM*42

```

—ROBERT PAGANO, TEANECK, NJ

\$490 64 MULTI-SYS

Commodore 64 users have done without a multi-SYS utility for far too long. With it, you can reactivate several interrupt-driven (better known as "wedge") programs residing in memory by entering just one SYS command.

Let's say you've placed an interrupt-driven utility at location 828, a second wedge utility, such as RUN's 64 DOS Shell (November 1987), at location 34500, a third wedge at location 49152 and a DOS wedge at a higher location (52000+). Now, should you perform a soft or hard reset, all of these utilities would be deactivated and you'd have to enter four SYS numbers to reactivate them.

However, had you run my 64 Multi-SYS program after initially activating all the above utilities, and input each utility's starting address at the prompts, you could enter SYS 730 and they would all be reactivated. In fact, 64 Multi-SYS can reactivate up to ten interrupt-driven wedge programs.

Of course, while 64 Multi-SYS is a great little utility, it requires compatibility testing on the part of the user. You must be certain beforehand that the wedge programs you intend to use with it are compatible with each other and do not use locations 730 to 763. Once you've determined their compatibility, you'll find yourself wanting to use 64 Multi-SYS whenever you're programming with more than one wedge utility.

```

0 REM 64 MULTI-SYS - ERIC B. THOMAS
:REM*32
10 FORX=730 TO 762 STEP3 :REM*27
20 READ A,B,C:POKE X,A:POKE X+1,B:POKE X+2

```

Free Spirit
Software Inc.



"...excellent, efficient program that can help you save both money and downtime."

Computer's Gazette,
Dec., 1987

1541/1571 DRIVE ALIGNMENT

1541/1571 Drive Alignment reports the alignment condition of the disk drive as you perform adjustments. On screen help is available while the program is running. Includes features for speed adjustment and stop adjustment. Complete instruction manual on aligning both 1541 and 1571 drives. Even includes instructions on how to load alignment program when nothing else will load! Works on the C64, SX64, C128 in either 64 or 128 mode, 1541, 1571 in either 1541 or 1571 mode! Autoboots to all modes. Second drive fully supported. Program disk, calibration disk and instruction manual only \$34.95!

Super 81 Utilities is a complete utilities package for the 1581 disk drive and C128 computer. Among the many Super 81 Utilities features are:

- Copy whole disks from 1541 or 1571 format to 1581 partitions
- Copy 1541 or 1571 files to 1581 disks
- Copy 1581 files to 1571 disks
- Backup 1581 disks or files with 1 or 2 1581's
- 1581 Disk Editor, Drive Monitor, RAM Writer
- Supplied on both 3 1/2" and 5 1/4" diskettes so that it will load on either the 1571 or 1581 drive
- Perform many CP/M and MS-DOS utility functions
- Perform numerous DOS functions such as rename a disk, rename a file, scratch or unscratch files, lock or unlock files, create auto-boot and much more!

Super 81 Utilities uses an option window to display all choices available at any given time. A full featured disk utility system for the 1581 for only \$39.95!

SUPER
81
UTILITIES

RAMDOS

RAMDOS is a complete RAM based "Disk" Operating System for the Commodore 1700 and 1750 RAM expansion modules which turns all or part of the expansion memory into a lightning fast RAM-DISK. RAM-DOS behaves similar to a much faster 1541 or 1571 floppy disk except that the data is held in expansion RAM and not on disk. Under RAMDOS, a 50K program can be loaded in 1/2 second. Programs and files can be transferred to and from disk with a single command. RAMDOS is available for only \$39.95!



SUPER BIKE

Action-packed, fun-filled motor cycle arcade game for the C64. Race the clock in Motocross, Enduro, Supercross or Trials. Fly through the air on spectacular jumps. Bounce over woop-de-doo's. Avoid logs, trees, water holes, brick walls, other bikers, etc. as you vie for the gold cup. Thrilling Super Bike action for only \$29.95.

GALACTIC FRONTIER

Exciting space exploration game for the C64. Search for life forms among the 200 billion stars in our galaxy. Scientifically accurate. Awesome graphics! For the serious student of astronomy or the casual explorer who wants to boldly go where no man has gone before. Only \$29.95!

Torchbearer



Years ago, Talis Vaultheart, a powerful and evil wizard, stole the Torch of Truth and hid it somewhere within the many sanctuaries and dungeons of Pastoria. With the people thus blinded, Vaultheart began to take the land. The time has come to take it back! The land of Pastoria is a large island with many smaller islands surrounding. You will explore many of them on your quest for the lost torch. Although you start as a common citizen, you are far from common. You possess the last of the mysterious luck stones! Study magic, increase your fighting strength and speak with the townspeople. All this will help you on your quest. Torchbearer is a challenging, graphic adventure game for the C64. \$29.95.

ULTRA DOS UTILITIES MODULE 1

Backup those valuable files on your Hard Disk the easy way

- High Speed whole hard drive backup with multi-format feature
- Auto configures to multi-hard drive systems or multi-partitions
- Supports up to 8.5 meg of memory
- Uses a unique double buffered file copy routine for lightning fast copies
- Full Intuition interface for maximum ease of use
- Backs up files
 - 1) by creation date
 - 2) with 'Point and click' selection (name, directory, drive)
 - 3) using 'wild-card' search patterns
- Fully supports Multi-tasking, does not monopolize CPU to achieve its speed. Designed to operate in the 'background'
- Compatible with any Hard drive that follows conventional AmigaDOS file protocol
- 512K Amiga required
- Hard Drive NOT REQUIRED. Ultra DOS Utilities Module 1 works equally well with dual floppy drives!

Ultra DOS Utilities, Module 1 is only \$59.95!

Order with check, money order, VISA, MasterCard, COD. Free shipping & handling on US, Canadian, APO, FPO orders. COD & Foreign orders add \$4.00. Order from:



FREE SPIRIT SOFTWARE, INC.
905 W. Hillgrove, Suite 6
La Grange, IL 60525
(312) 352-7323



Selected Products available from Financial Systems Software, LTD. in England.
0905-611-463

MAGIC

```

,C:RESTORE:NEXT:POKE,96      :REM*129
30 DATA 32,251,2             :REM*246
40 ADD= 731:FORN=1 TO 10      :REM*99
50 PRINT"ENTER SYS ADDRESS OF UTILITY:"N;
                               :REM*242
60 INPUTA$:A$=RIGHT$(A$,5)    :REM*75
70 A=VAL(A$):IF A<10 THENN=10:GOTO100
                               :REM*244
80 HI=INT(A/256):LO=A-(HI*256):POKEADD,LO:
  ADD=ADD+1:POKEADD,HI:ADD=ADD+2 :REM*234
90 A$=""                      :REM*47
100 NEXT                      :REM*230
110 PRINT"SYS 730 RESETS ALL UTILITIES."
                               :REM*4

```

—ERIC B. THOMASA, WALKER, MI ■

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get

the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for C-128 mode only are not eligible for Trick of the Month.

If you'd like to have a copy of the latest edition of RUN's Magic Trick Writer's Guide, please send your request to the above address with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

MEGA-MAGIC

Record and play back your own word, color and motion symphonies with this 128 version of RUN's popular QuickDoc 64.

CURSOR COMMOTION 128

I really enjoyed the QuickDoc program for the C-64 (Mega-Magic, September 1987), which lets you save and play back any series of key presses, including Commodore graphics and colors. After playing with it for a while, I decided to write a version for the C-128's 40- and 80-Column modes.

After you type in QuickDoc 128, save a copy to disk before running it. When you run it, it checks to see if you're creating a QuickDoc file or reading one back. As with the 64 version, you can press any key but F7 in creating a document.

Use the F7 key only to signal that the document is done.

Because the program uses F7, you must enter POKE 828,183 before typing it in. This redefines the function keys to the C-64 values. To reinstate the default C-128 values, use POKE 828,173.

I suggest that you include the screen width in your document filenames to avoid problems such as "playing back" a full 80-column display on a 40-column screen, where only half of it will fit. ☐

—JIM BORDEN, CARLISLE, PA

Listing 1. QuickDoc 128 program.

```

10 GRAPHIC CLR:BANK15:POKE53280,12:A$="{CR
  SR LF} {CRSR LF}":C$="*":PRINT"{SHFT CL
  R}{CTRL N}{CTRL 4}"C$;      :REM*168
20 S1=PEEK(4624):S2=PEEK(4625):I=S1+S2*256
  :S=PEEK(I-2)+PEEK(I-1)*256   :REM*57
30 POKE53281,11:COLOR6,13:BANK0:IFS=0THENP
  OKE828,183:GOTO60             :REM*68
40 FORI=STO2{UP ARROW}16:B$=CHR$(PEEK(I)):
  IFB$="{FUNCT 7}"THENPRINTA$;"{CTRL 1}";
                               :END
50 PRINTA$B$C$;:FORJ=1TO20:NEXTJ,I:REM*134
60 DO:GETKEY B$:PRINT A$B$C$;:POKE I,ASC(B
  $):I=I+1:LOOP WHILE B$<>"{FUNCT 7}"
                               :REM*195
70 POKE828,173:POKEI,S1:POKEI+1,S2:I=I+2:H
  I=INT(I/256):POKE4624,I-HI*256 :REM*208
80 POKE4625,HI:RUN:{2 SPACES}QUICKDOC 128
  - JIM BORDEN                  :REM*29 ■

```

RUN it right: C-128 (40- and 80-Column modes)

RUN

THE COMMODORE 64/128 USER'S GUIDE

May 1988

An IDGC/I Publication

U.S.A. \$2.95

CANADA \$3.95

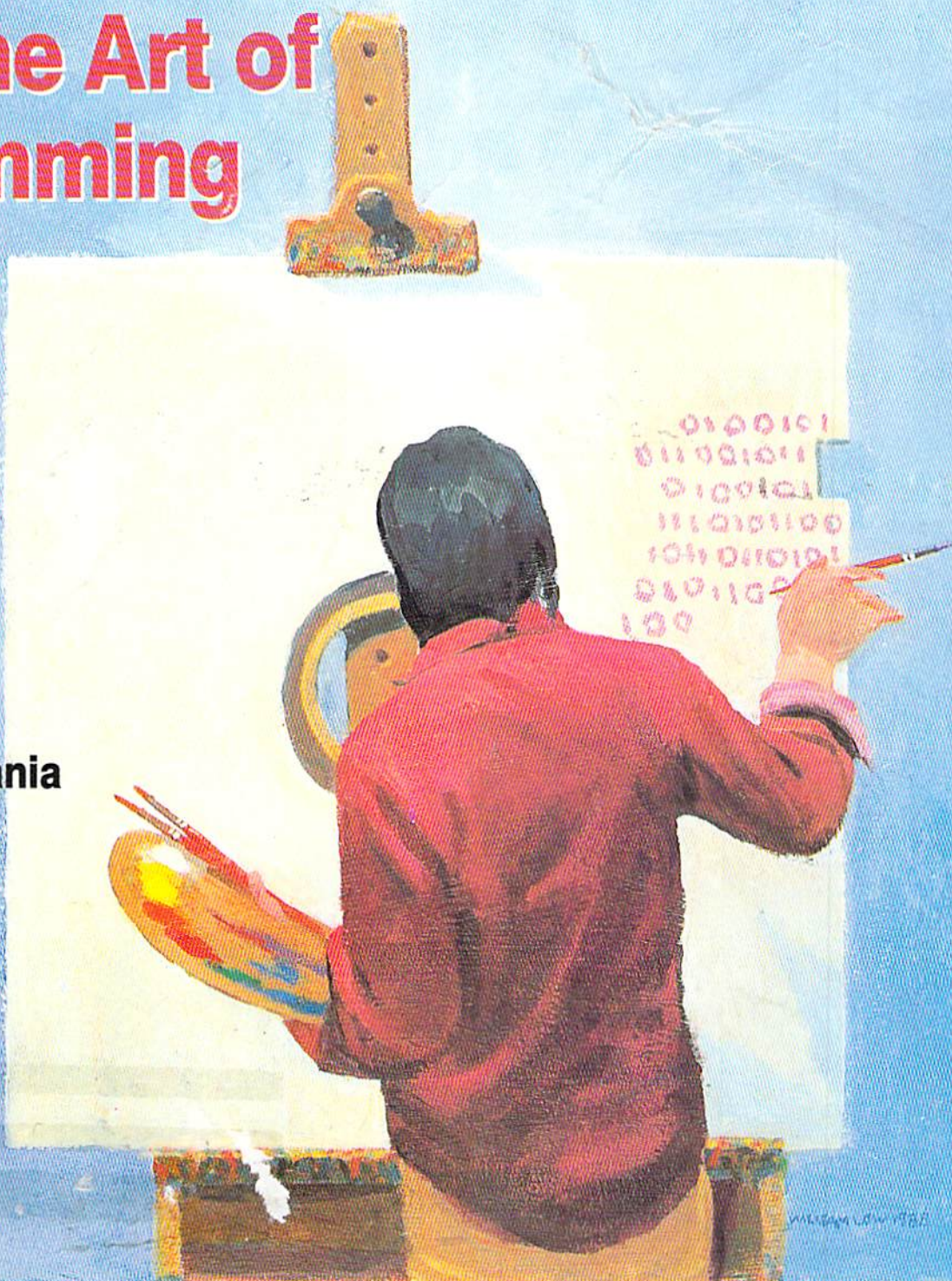
U.K. £2.00

All About
Assemblers

Learn the Art of Programming

Write
Your Own
Adventure
Game

Plus:
64 Marquee Mania
128 Graphix
To the Max!
Family Arcade
Challenge



MAGIC

Get the Getkey command for your C-64, stop that annoying cursor blinking or detect Illegal Quantity errors.

Compiled by TIM WALSH

\$491 HAPPY BIRTHDAY, DEAR COMMODORE

The next time you throw a birthday party for the kids, play my version of Happy Birthday on your C-64 or C-128 (be sure to try 80-Column Fast mode, too) while the party is going on. Flute and guitar sounds add a lot of sparkle.

```

0 REM HAPPY BIRTHDAY 64/128 - J.R. CHARNET
SKI :REM*240
10 INPUT "{SHIFT CLR}(S)LOW (M)ED (F)AST";T
$ :REM*162
20 T=1450-(T$="S")*200+(T$="F")*200:REM*46
30 N$="###">#40##">#<4##UE40)JJE4<4" :REM*45
40 D$="***&&$**&&&$**&&&$**&&&$**&&&#" :REM*196
50 S=54272:FORJ=S TO S+23:POKEJ,0:NEXT
:REM*44
60 POKES+5,13:POKES+12,9:POKES+24,15
:REM*57
70 FORJ=1 TO 25:N=ASC(MID$(N$,J,1))+15:GOS
UB120 :REM*56
80 D=ASC(MID$(D$,J,1))-34:POKES+1,N:GOSUB
120 :REM*37
90 POKES+8,N/2:POKES+4,17:POKES+11,33
:REM*123
100 FORZ=1TOT/D:NEXT:POKES+4,16 :REM*189
110 POKES+11,32:NEXT:POKES+24,0:GOTO20
:REM*3
120 A=A+1:PRINT"HAPPY BIRTHDAY!!":IFA=24TH

```

```

EN A=Ø:PRINTCHR$(147)      :REM*138
13Ø RETURN                  :REM*17

```

—JOSEPH CHARNETSKI, DALLAS, PA.

\$492 C-128 Box Rotation

After you've seen some of the C-28 animated graphics created by 80-column Basic extensions such as Ultra Hi-Res (*RUN*, February and May 1986), you'd probably doubt that a few lines of the C-28's built-in Basic 7.0 could animate a rotating rectangle in 40-Column mode. Well, C-28 Rotating Box does. So, gather your friends and neighbors around the computer and let your C-28 spin away!

```

Ø REM 4Ø-COLUMN C-128 ROTATING BOX - PAT M
  ARTIN                                     :REM*123
1Ø X=5                                     :REM*1Ø3
2Ø COLORØ,1:GRAPHIC1,1:COLOR1,4         :REM*218
3Ø BOX 1,1ØØ+X,1ØØ+Y,15Ø,15Ø,X         :REM*25Ø
4Ø X=X+5:SCNCLR:IFX=36Ø THENX=Ø         :REM*17
5Ø GOTO3Ø                                  :REM*176

```

—PAT MARTIN, KEYSTONE HEIGHTS, FL

\$494 TO NEW OR NOT TO NEW

Life is hard enough without the added stress from making mistakes on your C-64. To minimize those mistakes, here's ►

TRICK OF THE MONTH

\$493 64 LINE-NUMBER HIGHLIGHTER

Nothing is more frustrating than trying to distinguish a program's line numbers from the rest of the line on the C-64's screen. But if you execute 64 Line Number Highlighter before listing your program, it will produce line numbers of a color different from the rest of the listing.

Pressing run-stop/restore won't disable this routine, and its default memory location of 53145 will keep it transparent to most other programming utilities. If you want to change the color, enter POKE 53215,X, where X is a value between 0 and 15.

```

0 REM LINE NUMBER HIGHLIGHTER - RICHARD PR
  OFT                                     :REM*32
10 PRINTCHR$(147)"POKE 53215,X CHANGES LIN
   E # COLORS."                          :REM*179
20 FOR T = 53145 TO 53241:READ D:X=X+D:POKE
   T,D:NEXT                             :REM*230

```

```

30 IF X<>12583 THEN PRINT"ERROR IN DATA ST
   ATEMENTS..." :END :REM*166
40 SYS 53145:NEW :REM*120
50 DATA 169,0,133,251,169,160,133,252,160,
   0,177,251,145,251,200,208,249 :REM*187
60 DATA 165,252,201,191,240,5,230,252,76,1
   61,207,173,0,3,133,251,173,1 :REM*62
70 DATA 3,133,252,169,207,141,1,3,141,236,
   166,169,239,141,0,3,169,216 :REM*189
80 DATA 141,235,166,165,1,41,254,133,1,96,
   72,173,134,2,133,2,169,1,141 :REM*109
90 DATA 134,2,104,32,205,189,72,165,2,141,
   134,2,104,96,72,169,254,37,1 :REM*153
100 DATA 133,1,104,108,251,0 :REM*171

```

—RICHARD PROFT, SAN ANTONIO, TX

MAGIC

The New Prompt for your C-64. Once you've activated this interrupt-driven program, every New command you issue, whether in Program or Direct mode, causes an Are You Sure? prompt to appear, thus minimizing the likelihood of accidentally erasing valuable Basic programs.

```

Ø REM THE NEW PROMPT 64 - DAILAH HODGE
                                :REM*82
1Ø FORT=49152 TO 49273:READD:POKET,D:S=S+D
                                :NEXT
                                :REM*141
2Ø IFS<>15262THENPRINT"ERROR IN DATA...":E
ND
                                :REM*132
3Ø SYS 49152
                                :REM*2Ø4
4Ø DATA 169,Ø,141,21,192,141,24,192,169,16
Ø,141,22,192,141,25,192,16Ø
                                :REM*1Ø2
5Ø DATA Ø,162,Ø,185,255,255,153,255,255,2Ø
Ø,2Ø8,247,174,22,192,224,191
                                :REM*66
6Ø DATA 24Ø,9,238,22,192,238,25,192,76,2Ø,
192,165,1,41,254,133,1,169
                                :REM*226
7Ø DATA 76,141,68,166,169,67,141,69,166,16
9,192,141,7Ø,166,96,16Ø,Ø
                                :REM*173
8Ø DATA 185,1Ø2,192,24Ø,9,32,21Ø,255,2ØØ,2
4Ø,3,76,69,192,32,228,255
                                :REM*243
9Ø DATA 24Ø,251,32,21Ø,255,2Ø1,89,2Ø8,6,16
9,Ø,168,76,71,166,96,65
                                :REM*228
1ØØ DATA 82,69,32,89,79,85,32,83,85,82,69,
32,4Ø,89,47,78,41,Ø,Ø
                                :REM*25?

```

—DAILAH HODGE, ST. CROIX, VIRGIN ISLANDS

\$495 COOKING (WITH) YOUR C-64

My C-64 used to crash after being left on for a few hours, so I opened up the computer case and took a peek at the internals. I figured it was a problem with the computer's combination heat sink/RF shield overheating, since the crashes occurred only after a considerable amount of heat had built up. I unscrewed the shield, painted it flat black and re-installed it, using heat-sink compound on the tabs that come in contact with ICs. I also bent those tabs to ensure maximum contact and maximum heat dissipation.

To top things off, I fashioned a homemade heat sink from a piece of 1/2 x 1 1/2-inch aluminum and attached it with a screw and nut to the 7812 voltage regulator. Since I've made these minor hardware enhancements, my C-64 performs flawlessly, regardless of how long I leave it on. Of course, these modifications void the warranty, but the chances are that if your C-64 is still under warranty, its internals aren't likely to overheat any time soon.

—WILLIAM B. SHEA, CHANDLER, AZ

\$496 PARTITIONING YOUR 1581 DRIVE

Look on your 1581 Test Demo disk's directory and you'll find a program for partitioning your 3 1/2-inch disks. By partitioning, you can divide your disks into smaller directories, a must when you have 808K of storage space on a disk! Once you get your disks partitioned, though, you may find it tiresome to type OPEN 15,8,15,"/Ø:PROGRAM NAME":CLOSE 15 every time you access a partition.

To alleviate this problem, I wrote 1581 E-Z Partition, which works in both 64 and 128 modes. Type it in and substitute the names of each of your disk partitions for menu selections

1, 2 and 3. Next, save a copy to the root (main) directory of each of your 1581 disks. Then the next time you want a particular partition from a disk, just run my program and select the desired partition from the menu.

```

Ø REM OPENING 1581 DISK PARTITIONS (64 & 1
28) - ALAN L. BROWN
                                :REM*249
1Ø PRINT"(SHIFT CLR)OPEN WHICH 1581 PARTITI
ON?"
                                :REM*1Ø6
2Ø PRINT"1. ONE"
                                :REM*56
3Ø PRINT"2. TWO"
                                :REM*23Ø
4Ø PRINT"3. THREE"
                                :REM*27
5Ø GETA$:IFA$=""THEN5Ø
                                :REM*13
6Ø PRINT"WORKING...":OPEN 15,8,15,"IØ":CLO
SE 15
                                :REM*139
7Ø IF A$="1" THEN OPEN 15,8,15,"/Ø:ONE":GO
TO 1ØØ
                                :REM*29
8Ø IF A$="2" THEN OPEN 15,8,15,"/Ø:TWO":GO
TO 1ØØ
                                :REM*218
9Ø IF A$="3" THEN OPEN 15,8,15,"/Ø:THREE":
GOTO 1ØØ
                                :REM*2Ø8
1ØØ CLOSE15:GOTO 5Ø
                                :REM*32
11Ø CLOSE 15:PRINT"ALL DONE!"
                                :REM*31

```

—ALAN L. BROWN, ISLINGTON, ONTARIO, CANADA

\$497 NEW GET COMMAND FOR THE 64

Anyone who has spent time programming on the C-128 knows the simplicity and usefulness of the Getkey command, which lets 128 programmers create lines of Basic code such as:

```
100 GETKEYA$
```

Line 100 halts all program execution until a key is pressed. Because Basic 2.0 on the C-64 lacks a Getkey command, 64 programmers do not have the luxury of such simple statements. In Basic 2.0, the above example translates as:

```
100 GETA$: IF A$=""THEN 100
```

My program, New Get Command, modifies the C-64's Get statement to give a command that works just like the C-128's Getkey command. After activating my program, the syntax for the above samples will appear as:

```
100 GETA$
```

Whether you're new to programming or an experienced programmer, you'll find this an invaluable command. Since the new Get command resides in the rarely used memory locations 679 to 687, it can be used with many other machine language utilities without any memory conflicts.

```

Ø REM GETKEY FOR C-64 - RICHARD PENN
                                :REM*97
1Ø FORT= 679 TO 687: READ D:POKE T,D:NEXT
                                :REM*2Ø5
2Ø POKE 81Ø,167:POKE 811,2
                                :REM*5
3Ø DATA 72,165,198,24Ø,252,1Ø4,76,62,241
                                :REM*149
4Ø REM PLACE YOUR PROGRAM HERE
                                :REM*232
1ØØ PRINT"GETKEY DEMO - PRESS ANY KEY":GET
A$:PRINT A$
                                :REM*157

```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

Continued on p. 85.

MAGIC

From p. 12.

\$498 DISPLAYING 64 DOODLE! SCREENS MADE EASIER

If you have a C-64 and some Doodle! screens, use my program to display the screens on your C-64 without having to use any additional graphics programs. Just substitute the filename of your Doodle! screen saved to disk in line 10 and run my program. Your Doodle! screen will appear in a few moments.

```
Ø REM DOODLE! PIC DISPLAY - MATT TOON
                                :REM*225
1Ø IF A=Ø THEN A=1:LOAD "DDFILENAME",8,1
                                :REM*139
2Ø A=53265:POKE A+3313,3:POKE A+3311,6
                                :REM*1
3Ø POKE A+7,PEEK(A+7) OR 8      :REM*181
4Ø POKE A+7,(PEEK(A+7)AND 15) OR 112
                                :REM*213
5Ø POKE A,PEEK(A) OR 32         :REM*146
                                —MATT TOON, BRENTWOOD, CA
```

\$499 DISPLAYING DOODLE! SCREENS IN 128 MODE

If you're a C-128 owner, no program is needed to display your C-64 Doodle! screens in C-128 40-Column mode. To display your picture, place a disk with a Doodle! screen into the disk drive and enter the following statement in Direct mode:

```
GRAPHIC 1,1:BLOAD "DDFILENAME",B0,P7168
```

As in the above C-64 Doodle! trick, you'll have to place the correct filename in place of "DDFILENAME".

—JAMISON K. GUYTON, CLINTON, SC

\$49A UNBLINKING THE C-64'S CURSOR

Most C-128 users know that they can stop, or freeze, the C-128's blinking cursor in both 40- and 80-Column modes by pressing ESC, followed by the E key. Running my program, No-Blink 64 Cursor, stops the C-64's cursor from blinking. Pressing run-stop/restore causes the cursor to begin blinking again, and entering SYS 688 refreezes the cursor.

```
Ø REM C-64 NON-BLINK CURSOR - JIM BERNARD
                                :REM*2Ø6
1Ø FORX= 688 TO 722:READ A:POKE X,A:CK=CK+
  A:NEXT                          :REM*188
2Ø IF CK<>4197 THENPRINT "DATA ENTRY ERROR
  ":END                          :REM*133
3Ø SYS 688:NEW                    :REM*153
4Ø DATA 12Ø,169,189,141,2Ø,3,169,2,141,21,
  3,88,96,32,234,255,72,165      :REM*66
5Ø DATA 2Ø3,2Ø1,64,2Ø8,8,165,2Ø7,24Ø,4,1Ø4
  ,76,97,234,1Ø4,76,52,234      :REM*88
```

—JIM BERNARD, MAKAKILO, HI

\$49B ELIMINATING COMPUTER STATIC

By dusting my computer equipment with a rag sprayed with a mixture of laundry anti-static/softener and water, I found that I could eliminate dangerous static shocks. Since

Free Spirit
Software Inc.



"... excellent, efficient program that can help you save both money and downtime."
Computer's Gazette,
Dec., 1987

1541/1571 DRIVE ALIGNMENT

1541 / 1571 Drive Alignment reports the alignment condition of the disk drive as you perform adjustments. On screen help is available while the program is running. Includes features for speed adjustment and stop adjustment. Complete instruction manual on aligning both 1541 and 1571 drives. Even includes instructions on how to load alignment program when nothing else will load! Works on the C64, SX64, C128 in either 64 or 128 mode, 1541, 1571 in either 1541 or 1571 mode! Autoboots to all modes. Second drive fully supported. Program disk, calibration disk and instruction manual.

Only **\$3495!**

Super 81 Utilities is a complete utilities package for the 1581 disk drive and C128 computer. Among the many Super 81 Utilities features are:

- Copy whole disks from 1541 or 1571 format to 1581 partitions
- Copy 1541 or 1571 files to 1581 disks
- Copy 1581 files to 1571 disks
- Backup 1581 disks or files with 1 or 2 1581's
- 1581 Disk Editor, Drive Monitor, RAM Writer
- Supplied on both 3 1/2" and 5 1/4" diskettes so that it will load on either the 1571 or 1581 drive
- Perform many CP / M and MS-DOS utility functions
- Perform numerous DOS functions such as rename a disk, rename a file, scratch or unscratch files, lock or unlock files, create auto-boot and much more!

Super 81 Utilities uses an option window to display all choices available at any given time. A full featured disk utilities system for the 1581. Only **\$3995!**

RAMDOS

RAMDOS is a complete RAM based "Disk" Operating System for the Commodore 1700 and 1750 RAM expansion modules which turns all or part of the expansion memory into a lightning fast RAM-DISK. RAMDOS behaves similar to a much faster 1541 or 1571 floppy disk except that the data is held in expansion RAM and not on disk. Under RAMDOS, a 50K program can be loaded in 1/2 second. Programs and files can be transferred to and from disk with a single command. RAMDOS is available for only **\$3995!**

SUPER DISK UTILITIES

The ultimate utilities disk for the 1571 disk drive and C128 computer. Copy whole disks (with 1 or 2 drives), change disk format (without affecting data), perform CBM, DOS, CP / M, and MS-DOS utility functions, contains disk editor, drive monitor, RAM Writer and more. Only **\$3495!**

OXFORD PASCAL 128

OXFORD PASCAL 128 is an implementation of standard Pascal designed specifically for the C128. It offers all the enhancements of this powerful language together with some useful enhancements for the C128. Only **\$3995!**

SECURITIES ANALYST — 128

Securities Analyst — 128 displays text information in 80 column mode while simultaneously displaying charts and graphs in 40 column mode. Stock data may be saved on disk or printed on a dot matrix or 1520 Printer / Plotter. Among the many types of charts which may be prepared are weekly performance, moving average, accumulation / distribution, trailing stops, point and figure. Analysis includes P / E ratios, coefficient of variability, beta factor and more. Use the investment tool of the pros! Only **\$3995!**

SUPER DISK LIBRARIAN

A full featured disk cataloging & library system for the C128. Catalog up to 1000 disks & 14,400 program names! Operates in fast mode with 80 column display. Catalogs 64, 128 & CP / M Plus formatted disk directories! Printer output of library index, full library report, master program list, category program list & disk labels. Also contains full featured disk utilities section including rename a disk, copy protect a disk, change disk format & much more. **\$2495!**

Order with check, money order, VISA, MasterCard, COD. Free shipping & Handling on US, Canadian, APO, FPO orders. COD & Foreign orders, add \$4.00. Order from:

FREE SPIRIT SOFTWARE, INC.

905 W. Hillgrove, Suite 6
LaGrange, IL 60525

In IL (312) 352-7323

Outside IL 1-800-552-6777

Technical Assistance (312) 352-7335

Selected products available from Financial Systems Software, LTD. in England 0905-611-463



MAGIC

even the smallest static shock can cause severe damage to computer equipment (some static packs a whopping 7000 volts!), I also lightly spray my anti-static/softener mixture on the carpet area around my computer. As a result, no static is present for several weeks between applications.

—NANCY BROWN, ELKHART, IN

\$49C C-64 DATA ERRORS REVISITED

Magic Trick \$469 in the February 1988 issue offered a method of locating Data statement errors that produce Illegal Quantity Error in Line XX messages. My alternative is to enter the following statement in Direct mode after receiving the Illegal Quantity message:

```
PRINT PEEK(63) + 256*PEEK(64)
```

The number that appears on the screen is the line number of the Data statement containing the illegal quantity. You can then list that line and compare it to the original.

—ROBERT V. TAYLOR, LITTLE ROCK, AR

\$49D HELP FIND BASIC 7.0 ERRORS

While the C-128's ability to permit up to 160 characters per program line is, for the most part, a desirable feature, it does have a drawback when you have a program line that's packed with multiple statements. Let's suppose you get an Illegal Quantity Error in line 595. So, in 80-Column mode, press the help key, and you see a long line like this:

```
595 IF LEFT$(PR$(J),1)="#" THEN PRINT#4, PR$(J)
STR$(I+NM-1) SPC(SP-1) PR$(J) STR$(I+NM):GOTO670
```

The chances are that you'll waste time checking the syntax and trying to trace the function of each command before you can begin looking for the source of the error.

Well, don't despair. Try breaking the line down into several smaller lines. If you've numbered your program in increments of five or ten, then you'll have no problem breaking down line 595 into vacant lines in between existing lines as follows:

```
595 IF LEFT$(PR$(J),1)="#" THEN PRINT#4, PR$(J)
STR$(I+NM-1);
596 PRINT#4, SPC(SP-1);
597 PRINT#4, PR$(J);
598 PRINT#4, STR$(I+NM)
599 GOTO 670
```

After breaking the line down, run the program again. You'll get the same Illegal Quantity Error in XXX, only now XXX might be line 595, 596, 597 or 598, narrowing the search down to a smaller line. You'll find that short lines make life a lot easier when you're debugging programs.

—SI LABAR, BETHLEHEM, PA

\$49E TYPING IN HEX LOADERS, REVISED

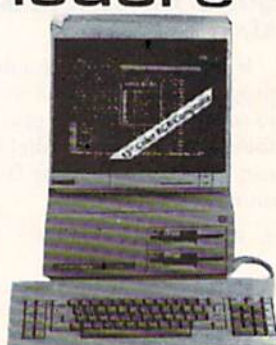
My program, an alternative to Magic trick \$485 (April 1988), modifies both the C-128's function keys and the keypad to facilitate entering hexadecimal listings published in RUN. After you type in and run my program, function keys F1, F3, F5 and F7 become A, B, C and D respectively, and the + and - keys on the keypad are redefined as E and F. Using these adjacent keys for the letters A-F, instead of hopping all over the keyboard, makes entering the hex data much easier. Finally, the F2 key will print the word DATA, so you'll no longer have to type it. ▶

commodore

PC10-2 TURBO

\$599^{95*}

*with any monitor purchase



SYSTEM INCLUDES:

- 640K
- Dual Drive
- Serial Port
- Parallel Port
- Graphics Card
- 2-Speed C.P.U.

MODEMS

SUPRA Hayes Compatible

2400 ... \$169⁹⁵

External

KISS ENGINEERING

2400 ... \$129⁹⁵

INTERNAL

Avatex

1200 Baud ... \$79^{95*}

1200 Int. ... \$79⁹⁵

1200 H.C. ... \$99^{95*}

2400 Baud ... \$179^{95*}

*W/Cable Purchase

Panasonic
Industrial Company



Laser ... \$Call

1080i-II ... \$160*

1091i-II ... \$180*

1092i ... \$280*

1592i-II ... \$380*

1524i-II ... \$520*

*W/2 Ribbon Purchase

star
MULTI-STAR



\$220

Laser ... \$Call

NX1000 ... 160*

NX15 ... 280*

NB2410 ... 380*

NR15 ... 420*

Powertype L.Q. ... 160*

ACCESSORIES

- AB Switch ... \$30
- Mouse Pad ... \$6
- Disk Case 3 1/2 ... \$8
- Disk Case 5 1/4 ... \$8
- Disk Head Clnr ... \$8
- Epyx Joystick ... \$15

- Most Cables ... \$15
- 1764 Ram ... \$120
- Xetec Super Graphix ... \$55
- Xetec Graphix Jr. ... \$35
- MW350 2K/10K ... \$Call
- 1351 Mouse ... \$40
- Disk Notcher ... \$5
- Seagate ... \$230

OKIMATE
20

\$179⁹⁵

APROTEK
MINIMODEM \$79⁹⁵

Hayes Compatible

18 C.P.S. Daisy Wheel

\$98⁰⁰
LIMITED
QUANTITY



Commodore or IBM
Interface ... \$19.95

DISKS

3 1/2 DS/DD GENERIC \$1.30

3 1/2 DS/DD ... \$1.50

SONY-FUJI-MAXELL-BASF

5 1/4 DS/DD GENERIC 30¢

5 1/4 DS/DD (50 Lot) 60¢

BASF • NASHUA

Circle 207 on Reader Service card.

NOW **\$64.⁹⁵** FOR ANY COMMAND CENTER CABINET.



Accessories:

- Dust Cover - 19.95
- Keyboard Cover - 19.95
- Drive Reset - 14.95
- Tilt-Swivel Monitor Stand - 14.95
- Serial Cable - 9.95
- Cartridge Port Ext. Cable - 24.95
- Modem Switch - 9.95

Data Director



\$39.⁹⁵

- Eliminates Cable Swapping
- Shares 2 6-pin Serial Devices
- LED Indicator Lights
- Reset Button

Continental U.S.

\$4.50 for each Command Center
\$2.00 for one accessory item
\$3.00 for two or more accessories

APO/FPO/Canada/Puerto Rico/ Hawaii/Alaska

\$13.00 for each Command Center
\$ 4.00 for one accessory item
\$ 6.00 for two or more accessories



Deluxe Models still available
with these popular features:

- Built-In Power Strip with surge and noise protection
- Built-In Cooling Fan
- Modular Phone Plug with Switch (optional on 64 & 64C)
- Master Power Switch
- Insert for Single or Dual Drives
- Also available for Amiga 500

128 . . . \$124.95
64 . . . 109.95
64C . . . 109.95

-KETEK

P.O. Box 203
Oakdale, IA 52319
For faster service, call
1-800-626-4582 toll free
1-319-338-7123 (IA Residents)

Circle 6 on Reader Service card.

The Hot Shot PLUS Advanced Graphics Printer Interface for Commodore computers



The Hot Shot PLUS is the most advanced and useful printer interface available for the Commodore computer. It supports all standard features you expect in an interface. The Hot Shot PLUS comes with an 8K buffer which you can expand up to 64K. It has 6 built-in NLQ fonts. It has a special graphics enhancement features which allows you to convert regular graphics to double or quadruple density. This is a great feature you will love. If you print graphics or use Geos software, there is no better interface available. The Hot Shot PLUS has several utility programs stored in the ROM, including a status display and font designer program. You can load them in just like the Hot Shot PLUS was a disk drive. Many more features! If you are in the market for an interface, find out the facts about the Hot Shot PLUS first! Call us or mark the reader service card and we will send you a catalog.

Only \$99.95

FOR A COMPLETE CATALOG OF ALL OUR
PRODUCTS, CALL US OR MARK OUR READER
SERVICE CARD NUMBER.

CALL TODAY! See your local Commodore dealer or call us direct
at (206) 624-4985. Visa, MC, and COD welcome. All charge orders
verified. Dealer and Distributor inquiries very welcome.

Omnitronix, Inc.

760 Harrison Street - Seattle Washington 98109 - (206) 624-4985

MAGIC

```
Ø REM 128 ENTRY AID FOR RUN'S HEX LISTINGS
  - BOB KODADEK                                :REM*2Ø7
1Ø BANK 15                                      :REM*113
2Ø VEC=DEC("Ø33E"):REM KEY VECTOR             :REM*231
3Ø LOC=DEC("ØCØØ"):REM NEW TABLE LOCATION    :REM*2Ø5
4Ø MEM=DEC("FA8Ø"):REM OLD TABLE LOCATION    :REM*249
5Ø FOR I=Ø TO 88                                :REM*45
6Ø POKE LOC+I, PEEK(MEM+I)                    :REM*157
7Ø NEXT                                         :REM*2ØØ
8Ø POKE VEC, LOC AND 255:POKE VEC+1, INT(LOC  :REM*72
  /256)
9Ø KEY 1, "A":KEY 3, "B":KEY 5, "C":KEY 7, "D" :REM*99
1ØØ POKE LOC+73, ASC("E"):POKE LOC+74, ASC("  :REM*2Ø
  F")
11Ø POKE LOC+82, ASC(",")                    :REM*224
12Ø KEY 2, "DATA "                          :REM*143
```

—ROBERT KODADEK, ASTON, PA

\$49F C-64 INPUT ENHANCED

Including the following statement in your Basic program
lets you change the question mark generated by the Input
statement to any other character desired:

```
100 FOR I=40960 TO 49151: POKE I, PEEK(I): NEXT: POKE 1,
  PEEK(1) AND 254
110 POKE 43846, X
```

Variable X in line 110 is any number from 0 to 255. The
question mark normally following an Input statement is
converted to the ASCII value of X. If you're inputting num-
bers, you might want to give X a value of 35, which produces
a pound sign (#) to represent numeric input. Of course, you
can change line numbers 100 and 110 if you want to place
this routine anywhere in your program. Also, be patient,
because this program takes a few minutes to run.

—JOE VANDERWERKEN, HUDSON FALLS, NY ■

*Magic is the original column of reader-submitted hints and tips.
Each month we present brief, useful computer tricks to help you get
the most out of your Commodore system—whether you're a beginning
or advanced computerist, a C-64 or C-128 owner. Magic is a forum
for RUN's imaginative and inventive readers to share their pro-
gramming tips, brief software or hardware modifications, shortcuts
or items of general interest. If you have an idea to make computing
easier, faster, more exciting and enjoyable, send it to:*

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A
payment of \$50 and a Magic Contributor T-shirt is awarded for the
Trick of the Month. To be eligible, the Trick of the Month must be
for the C-64 or the C-64 and C-128. Tricks for C-128 mode only are
not eligible for Trick of the Month.

If you'd like a copy of the latest edition of RUN's Magic Trick
Writer's Guide, send your request with a self-addressed, stamped,
business-size envelope; you'll receive a copy in two or three weeks.

RUN

THE COMMODORE 64/128 USER'S GUIDE

June 1988

An IDGC/I Publication

U.S.A. \$2.95

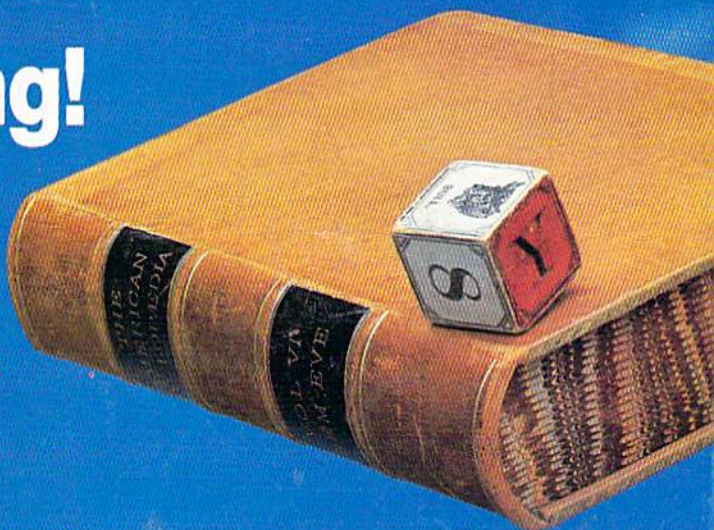
CANADA \$3.95

U.K. £2.00

Enter
RUN's Software
CONTEST!
See p.24

Look What's New In Word Processing!

- Fonts
- Spelling Checkers
- Communications
- Mail Merge...and More

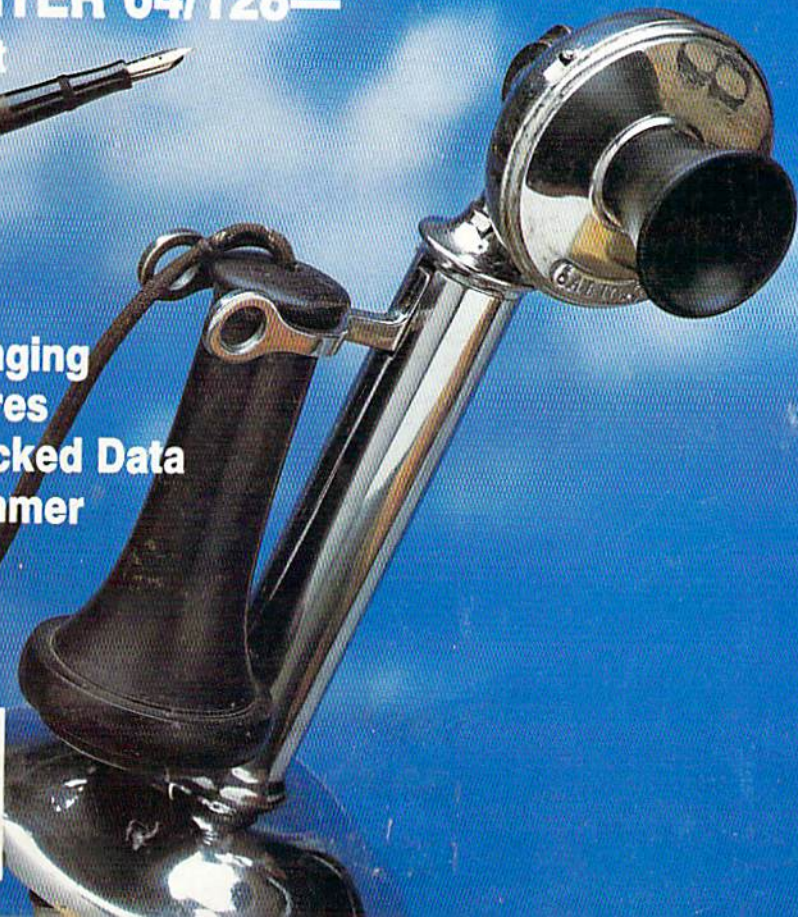


FORM WRITER 64/128— Create & Print Forms



Plus:

- Two Challenging
64 Adventures
- Recover Locked Data
- GeoProgrammer
Review



MAGIC

Magic readers improve some previously published programs and offer indented loops and numeric-expression input.

Compiled by TIM WALSH

\$4A0 C-64 CHARACTER MISCHIEF

Fancy screen effects are nothing new on the C-64; programmers have been performing them for years. Here's a new one that could be called bizarre, unique, odd, unusual... well, let's just say it defies description. Letter characters will perform this scrolling effect, and you can change the speed by entering POKE 49273, followed by a comma, and then any number from 1 to 255, with 1 being fastest.

Type it in, give it a try, and you're certain to agree that there is nothing like it. Since the routine can be repeatedly activated with SYS 49152, you can easily incorporate it into menus, text adventures and games. Think of the possibilities!

```
Ø REM MAGICAL CHARACTER SCROLL - JEFF MART
IN                                     :REM*29
1Ø FOR I=49152 TO 49285:READD:POKE I,D:CK=
CK+D:NEXT                             :REM*162
2Ø IF CK<>18682 THEN PRINT"ERROR IN DATA..
." :END                               :REM*62
3Ø FORC=1TO24:FOR S= 65 TO 9Ø:PRINT CHR$(S
);:NEXT:NEXT                           :REM*234
4Ø PRINT:PRINT"{CTRL 2}{2 CRSR DNs}PRESS A
KEY FOR MAGICAL SCROLL{COMD 7}"
                                         :REM*237
5Ø GETA$:IF A$="" THEN 5Ø              :REM*13 ▶
```

TRICK OF THE MONTH

\$4A1 AUTOMATICALLY INDENTING FOR-NEXT LOOPS

Structured programming always stresses the importance of indenting For-Next loops so that a programmer can find them quickly in a listing. Placing a colon before the statement(s) within a For-Next loop is the only way the C-64's interpreter will accept indentations. Here's an example of an indented loop:

```
10 FOR T=1 TO 10
20 : PRINT T
30 NEXT
```

While this method improves program clarity, it also quickly devours precious memory. To eliminate this problem, I wrote the 64 For-Next Indenter program. After typing in and running this utility, program lines containing For-Next statements will automatically indent without losing any valuable memory when you list a program to the screen.

For a demonstration of how this program works, run Listing 1 and type in and list Listing 2 to the screen. Always bear in mind that in order for this program to work properly, your listings must adhere to one basic rule: The For and Next statements must be the only statements in a line. For added versatility, the program is designed so that pressing run-stop/restore won't deactivate the routine.

```
Ø REM FOR/NEXT LOOP INDENTER - SCOTT WEISGA
ARBER                                  :REM*99
1Ø FOR T= 828 TO 958                  :REM*212
2Ø READ A                             :REM*28
3Ø POKE T,A                           :REM*231
4Ø X=X+A                               :REM*223
5Ø NEXT                               :REM*18Ø
```

```
6Ø IF X<>19344 THENPRINT"ERROR IN DATA...
":END                                 :REM*211
7Ø POKE 1Ø2Ø,Ø:SYS936:SYS828:POKE 42731,1
37:POKE 42732,3                       :REM*87
8Ø DATA 169,75,141,6,3,169,3,141,7,3,169,
Ø,133,251,96,8,133,252,132,253:REM*175
9Ø DATA 134,254,173,141,2,2Ø8,251,165,252
,2Ø1,129,2Ø8,9,238,252,3,238 :REM*25
1ØØ DATA 252,3,76,123,3,2Ø1,13Ø,2Ø8,17,16
9,2Ø,32,21Ø,255,32,21Ø,255 :REM*87
11Ø DATA 173,252,3,56,233,2,141,252,3,169
,54,133,1,166,254,164,253,4Ø :REM*159
12Ø DATA 165,252,76,26,167,32,2Ø5,189,8,1
33,252,134,253,132,254,169,32 :REM*84
13Ø DATA 172,252,3,24Ø,6,32,21Ø,255,136,2
Ø8,25Ø,4Ø,164,254,166,253,165 :REM*17
14Ø DATA 252,96,162,32,169,16Ø,16Ø,Ø,133,
252,132,251,177,251,145,251 :REM*114
15Ø DATA 2ØØ,2Ø8,249,23Ø,252,2Ø2,2Ø8,244,
96 :REM*62
```

```
Ø REM SAMPLE FOR/NEXT TEST - SCOTT WEISGA
RBER                                  :REM*193
1Ø FOR T= 1 TO 5                      :REM*119
2Ø FOR Y= 5 TO 1 STEP -1              :REM*47
3Ø PRINT Y,T                          :REM*62
4Ø PRINT T,Y                          :REM*82
5Ø NEXTY                              :REM*1Ø3
6Ø NEXT T                             :REM*1Ø3
```

—SCOTT WEISGARBER, MONROEVILLE, NJ

MAGIC

```
60 SYS 49152:GOTO 30 :REM*97
70 DATA 169,48,133,52,133,56,173,14,220,41 :REM*177
,254,141,14,220,165,1,41,251 :REM*177
80 DATA 133,1,169,0,133,252,133,254,169,20 :REM*70
8,133,255,169,48,133,253,160,0 :REM*70
90 DATA 177,254,145,252,230,254,208,2,230, :REM*105
255,230,252,208,2,230,253,165 :REM*105
100 DATA 253,201,50,208,234,165,1,9,4,133, :REM*207
1,173,14,220,9,1,141,14,220 :REM*207
110 DATA 173,24,208,41,240,24,105,12,141,2 :REM*58
4,208,169,48,133,253,162,0,160 :REM*58
120 DATA 216,177,252,72,136,177,252,200,14 :REM*91
5,252,136,192,8,208,245,104 :REM*91
130 DATA 145,252,232,238,60,3,208,3,238,61 :REM*224
,3,173,61,3,201,5,208,241,169 :REM*224
140 DATA 0,141,61,3,224,209,208,212,96 :REM*88
```

—JEFF MARTIN, ROSEVILLE, CA

\$4A2 UPDATE FOR 64 DOS SHELL

64 DOS Shell by John Ryan (November 1987) is a versatile disk utility and programming aid for the C-64 that matches the usefulness of Commodore's 1571 DOS Shell for the C-128. Yet, every program has room for improvement.

Place my 64 DOS Shell Boot on a disk containing 64 DOS Shell and run it. It will automatically load, protect and initialize 64 DOS Shell. All you have to do is press the restore key to activate the program.

```
0 REM 64 DOS SHELL BOOT - MARK WOLTER :REM*169
10 PRINT CHR$(142):PRINT "BOOTING 64 DOS S :REM*102
HELL..." :REM*102
20 SYS 57812 "ML DOS SHELL",8,1:POKE780,0 :REM*17
SYS65493 :REM*17
30 POKE 51,44:POKE 52,135:POKE 55,44:POKE :REM*73
56,135:CLR :REM*73
40 SYS 34500:REM INITIALIZE :REM*183
50 PRINT CHR$(147)"DOS SHELL INSTALLED" :REM*196
60 PRINT"TO ACTIVATE, PRESS (CTRL 9)RESTOR :REM*145
E{CTRL 0} KEY":NEW
```

—MARK A. WOLTER, BRAUNSCHWEIG, WEST GERMANY

\$4A3 HIDE YOUR 64 LISTINGS AWAY

Newcomers to Commodore computing eventually encounter a lengthy program that reveals only a single line of code, such as 10 SYS 2068, when they attempt to list it to the screen.

Since such coding represents an excellent way to hide program listings from prying eyes, I've engineered an easy-to-use method of converting Basic programs to a similar format.

First, type in the listing below and save it to disk. Next, enter these commands in C-64 Direct mode:

```
POKE43,1:POKE44,8:POKE8192,0:POKE8193,0:NEW
```

Now load my program and run it. Don't worry if a syntax error appears. After the Ready prompt appears, enter these Pokes:

```
POKE43,1:POKE44,8
```

Now list the program to the screen, and run it again. Finally, list the program again and heed the message that appears at the beginning of the new listing. Now load in any Basic program, and add a line 0. Since the name of the game here is program security, line 0 might consist of:

```
0 POKE 808,239:POKE 792,193
```

which disables the C-64's run-stop/restore keys. Now enter the following two Pokes in Direct mode:

```
POKE 43,1:POKE 44,8
```

You're ready to save your program to disk. On all future loads, listing that file to the screen will produce a line number followed by a SYS command.

```
0 REM 64 HIDDEN BASIC LISTINGS - STEPHEN C :REM*135
HEUNG :REM*135
10 FOR T= 2049 TO 2139:READ D:CK=CK+D:POKE :REM*153
T,D:NEXT :REM*153
20 IF CK<> 5799 THEN PRINT"ERROR IN DATA S :REM*33
TATEMENTS...":END :REM*33
30 DATA 11,8,196,7,158,50,48,54,49,0,0,1 :REM*177
69,30,133,43,76,113,168,78,65 :REM*177
40 DATA 82,68,73,78,65,32,211,0,60,8,0,0,1 :REM*43
28,58,143,69,77,66,69,82,32,84 :REM*43
50 DATA 79,32,77,65,75,69,32,65,32,76,73,7 :REM*68
8,69,32,48,0,90,8,10,0,151,32 :REM*68
60 DATA 51,44,49,32,175,32,167,32,148,32,8 :REM*90
9,79,85,82,32,80,82,79 :REM*90
70 DATA 71,82,65,77,0,0,0 :REM*196
```

—STEPHEN CHEUNG, DEER PARK, NY

\$4A4 SATELLITE TRACKERS: YOUR DATE HAS ARRIVED

Most segments of government and communications rely on the Greenwich time coupled with the Julian date calendar to reduce confusion caused by time zones. The Julian date consists of the last two digits of the year followed by the day of the year, with January 1, 1988 being 88001, January 2 being 88002, and so on.

A group of RUN readers in Florida who track satellites and read NASA-prediction bulletins requested that I modify Calendar Maker (see Easy Applications, January 1988) to automatically print the last three digits of the Julian date (001, 002, etc.) as the last memo of each day. Satellite trackers everywhere can add the following lines to their Calendar Maker listing. Happy tracking!

```
0 REM CALENDAR MAKER UPDATE (DAY OF YEAR) :REM*235
LINES 445-658 - BOB KODADEK :REM*235
445 GOSUB 654 :REM*33
651 IF (YR/4)-INT(YR/4)=0 THEN ND(2)=29 :REM*74
:REM*74
652 RETURN :REM*25
653 :REM*197
654 PRINT"PLEASE WAIT...":PRINT :REM*170
655 DZ=0:FOR I=0 TO 11:DZ=DZ+ND(I):DA(I)=D :REM*80
Z:NEXT :REM*80
656 FOR I=1 TO ND(MO):XM$(I+J,5)=STR$(DA(M :REM*120
O-1)+I) :REM*120
657 IF LEN(XM$(I+J,5))<10 THEN XM$(I+J,5)=
```


MAGIC

XM\$(I+J,5)+CHR\$(32):GOTO 657 :REM*42
658 NEXT :REM*23

—BOB KODADEK, ASTON, PA

\$4A5 C-64 NUMERIC-EXPRESSION INPUT

Every C-64 programmer occasionally has had need for a numeric-expression Input routine in their programs. But just what, you might ask, is a numeric-expression Input routine? Simple: It is a routine that allows Input statements to accept and calculate equations such as $3*4+2/(8/2)$ and any other valid expression.

You don't have to be a programmer, though, to appreciate the benefits of a numeric-expression Input routine. Let's suppose you need to input the total cost of thirteen widgets at \$45.66 each, factor in seven percent sales tax, and you don't have a calculator handy. Entering the following equation into a numeric-expression Input routine would instantly calculate your answer:

1.07(13*45.66)

To use this routine in your own programs, include lines 60000 to 60030 and GOSUB 60000. The input value will be returned in the variable E.

```
Ø REM C-64 NUMERIC EXPRESSION INPUT - RICH
ARD PENN :REM*54
1Ø PRINTCHR$(147)"PLEASE ENTER AN EXPRESSI
ON";:GOSUB 60000 :REM*93
2Ø PRINT"THE VALUE YOU ENTERED IS";E
:REM*222
3Ø END :REM*158
60000 INPUT E$ :REM*48
60010 POKE 2,PEEK(646):POKE 646,PEEK(647):
PRINT"E=";E$;:GOTO60030 :REM*219
60020 POKE 631,145:POKE 632,145:POKE 633,1
45:POKE 634,13:POKE 198,4:END
:REM*151
60030 POKE 646,PEEK(2):PRINT"{CRSR UP}";:R
ETURN :REM*187
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA ■

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for C-128 mode only are not eligible for Trick of the Month.

If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

Free Spirit
Software Inc.



"... excellent, efficient program that can help you save both money and downtime." *Computer's Gazette, Dec., 1987*

1541/1571 DRIVE ALIGNMENT

1541 / 1571 Drive Alignment reports the alignment condition of the disk drive as you perform adjustments. On screen help is available while the program is running. Includes features for speed adjustment and stop adjustment. Complete instruction manual on aligning both 1541 and 1571 drives. Even includes instructions on how to load alignment program when nothing else will load! Works on the C64, SX64, C128 in either 64 or 128 mode. 1541, 1571 in either 1541 or 1571 mode! Autoboots to all modes. Second drive fully supported. Program disk, calibration disk and instruction manual.

Only **\$349⁹⁵!**

Super 81 Utilities now available for the C64!

Super 81 Utilities is a complete utilities package for the 1581 disk drive and C128 computer. Among the many Super 81 Utilities features are:

- Copy whole disks from 1541 or 1571 format to 1581 partitions
- Copy 1541 or 1571 files to 1581 disks
- Copy 1581 files to 1571 disks
- Backup 1581 disks or files with 1 or 2 1581's
- 1581 Disk Editor, Drive Monitor, RAM Writer
- Supplied on both 3 1/2" and 5 1/4" diskettes so that it will load on either the 1571 or 1581 drive
- Perform many CP / M and MS-DOS utility functions
- Perform numerous DOS functions such as rename a disk, rename a file, scratch or unscratch files, lock or unlock files, create auto-boot and much more!

Super 81 Utilities uses an option window to display all choices available at any given time. A full featured disk utilities system for the 1581. Only **\$399⁹⁵!**

THE SUPER CHIPS

Custom Operating System for the C128

Three 16K ROM chips that add several powerful features to Basic 7.0 including FIND, CHANGE...THIS...TO...THAT, TYPE, UNNEW, COMBINE, MERGE, START, FILE, EDITOR and more! Simultaneous split screen directories of devices 8 & 9. Compatible with 1541/1571/1581 and virtually all software and peripherals. Only **\$49⁹⁵!**

Super Chips, Custom Operating System for the C128D - Two 32K ROM chips - Only **\$49⁹⁵!**

Super Chip, Custom Operating System for the C64 - One 16K ROM chip - Only **\$29⁹⁵!**

Super Chip, Custom Operating System for the 64 mode of the C128 - Only **\$29⁹⁵!**

RAMDOS

RAMDOS is a complete RAM based "Disk" Operating System for the Commodore 1700 and 1750 RAM expansion modules which turns all or part of the expansion memory into a lightning fast RAM-DISK. RAMDOS behaves similar to a much faster 1541 or 1571 floppy disk except that the data is held in expansion RAM and not on disk. Under RAMDOS, a 50K program can be loaded in 1/2 second. Programs and files can be transferred to and from disk with a single command. RAMDOS is available for only **\$399⁹⁵!**

SUPER DISK UTILITIES

The ultimate utilities disk for the 1571 disk drive and C128 computer. Copy whole disks (with 1 or 2 drives), change disk format (without affecting data), perform CBM, DOS, CP / M, and MS-DOS utility functions, contains disk editor, drive monitor, RAM Writer and more. Only **\$349⁹⁵!**

ULTRA DOS UTILITIES MODULE I FOR THE AMIGA

High Speed Hard Drive or dual floppy drive backup utility for the Amiga 500, 1000 or 2000. 512K Amiga required. Compatible with any hard drive that follows conventional AmigaDOS protocol. Backup those valuable files on your Hard Disk the easy way for only **\$59⁹⁵!**

Order with check, money order, VISA, MasterCard, COD. Free shipping & Handling on US, Canadian, APO, FPO orders. COD & Foreign orders, add \$4.00. Order from:

FREE SPIRIT SOFTWARE, INC.

905 W. Hillgrove, Suite 6
LaGrange, IL 60525

In IL (312) 352-7323

Outside IL 1-800-552-6777

Technical Assistance (312) 352-7335

In England contact

Financial Systems Software 0905-611-463



RUN

THE COMMODORE 64/128 USER'S GUIDE

July 1988

An IDGC/I Publication

U.S.A. \$2.95

CANADA \$3.95

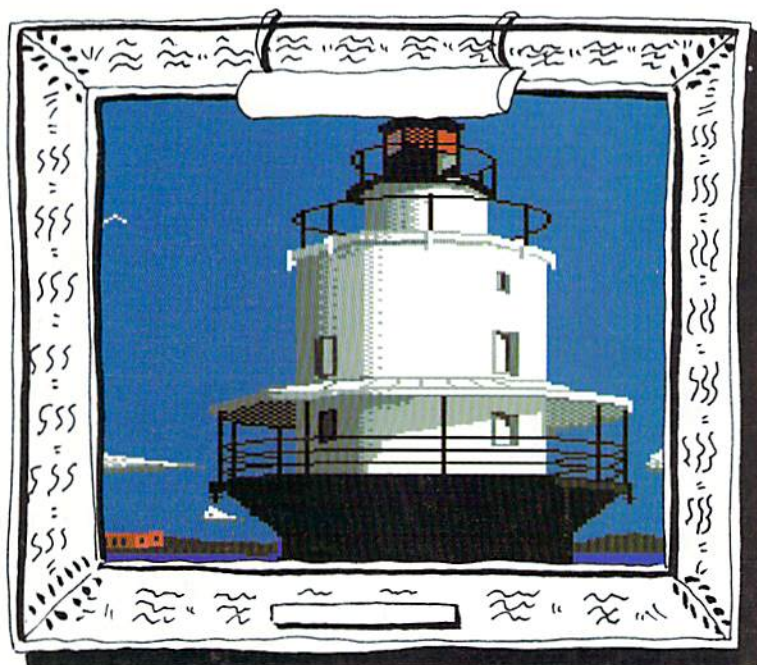
U.K. £2.00

Enter
RUN's Software
CONTEST!
See p.20



Graphics Gallery

- ▶ Software Survey
- ▶ C-64 Art Exhibit



MAGIC

Give your 128 an 80-column screen printer; take a cure for the Data statement blues; highlight the first line in Magic programs.

Compiled by TIM WALSH

\$4A6 RAPID FACTORS

Magic Trick \$454, Factor Finder (*RUN*, December 1987) fills an important niche as a handy factor program, but it's so slow that it is virtually useless for testing whether a very large number is prime. For instance, Factor Finder requires over 2½ hours to confirm that 675,643 is prime.

Using my Rapid Factors program (for either the C-64 or the C-128) results in a great increase in calculation speed over Factor Finder. After typing in and running my program, you can test 675,643 for factors in less than nine seconds. As another startling example, the largest prime number Rapid Factors is capable of testing (999,999,937) required 6½ minutes with my program (or about 3½ minutes using the C-128's Fast mode). By contrast, it would take Factor Finder almost *five months* to do the job!

```
0 REM FASTER FACTOR FINDER - BOB PITKIN SR      :REM*10
10 PRINT:INPUT"ENTER A NUMBER";N:N1=N           :REM*11
20 IFN=0 THENEND                                  :REM*38
30 IFN<10RINT(N)<>NTHENPRINT"ONLY WHOLE NU      :REM*94
```

```
MBERS GREATER THAN 0":GOTO10 :REM*166
40 FOR FP= 2 TO SQR(N) :REM*121
50 IFN/FP=INT(N/FP)THENPRINTFP"*";Z=1:N=N       :REM*33
/FP:GOTO 40 :REM*95
60 NEXT:PRINTN="N1:GOTO 10
```

—BOB PITKIN, SR., OZONA, FL

\$4A7 MAGIC TRICK TITLE HIGHLIGHTER

Here's an easy way to highlight the first line in Magic programs typed in from any 1988 issue of *RUN*. Load the program in 64 mode (C-64 programs only), insert an extra space after the REM in line 0, then enter the following in Direct mode:

POKE 2055,18

Now save the program. Whenever you list the modified version of the program, line 0 will appear in reversed video. You'll find that programs modified this way will also display the same changes in line 0 when loaded into C-128 40- and 80-Column modes.

—RICHARD PENN, MONTREAL, QUEBEC, CANADA ▶

TRICK OF THE MONTH

\$4A8 C-128 80-COLUMN SCREEN PRINTER

Here's an easy way to make a hard copy of the C-128's 80-column screen. Type in 80-Column Screen Printer, save a copy, and then run it in 80-Column mode. When you press the shifted British pound sign, it will send all the screen characters (except graphics characters) to your printer.

```
0 REM C-128 80-COLUMN SCREEN PRINT - MIKE      :REM*18
CORRIGAN
10 PORT=2816 TO 3062:READD:POKET,D:CK=CK+D     :REM*105
:NEXT
20 IFCK<27805 THEN PRINT"ERROR IN DATA..." :REM*25
":END
30 SYS 3052 :REM*131
40 DATA 169,0,133,251,133,252,76,61,11,169    :REM*231
,18,160,0,140,0,255,141,0,214
50 DATA 44,0,214,16,251,142,1,214,96,169,1    :REM*225
9,160,0,140,0,255,141,0,214
60 DATA 44,0,214,16,251,142,1,214,96,162,3    :REM*43
1,142,0,214,44,0,214,16,251
70 DATA 173,1,214,96,169,4,162,4,160,5,32,
```

```
186,255,169,0,32,189,255,32 :REM*61
80 DATA 192,255,162,4,32,198,11,166,252,32    :REM*142
,9,11,166,251,32,28,11,32,47
90 DATA 11,201,91,176,36,201,32,144,26,24,    :REM*96
201,64,176,21,32,210,255,230
100 DATA 251,165,251,201,0,208,219,230,252    :REM*94
,165,252,201,7,176,14,144,209
110 DATA 24,105,64,76,109,11,24,105,32,76,    :REM*94
109,11,166,252,32,9,11,166,251
120 DATA 32,28,11,32,47,11,201,91,240,33,2    :REM*46
01,32,144,23,24,201,64,176,18
130 DATA 32,210,255,230,251,165,251,201,20    :REM*139
8,208,219,32,201,11,32,231,255
140 DATA 96,24,105,64,76,168,11,24,105,32,    :REM*97
76,168,11,32,201,255,169,27,32
150 DATA 210,255,169,64,32,210,255,96,201,    :REM*172
169,240,3,76,173,198,32,0,11
160 DATA 96,77,73,75,69,32,67,79,82,82,73,    :REM*74
71,65,78,169,212,141,60,3,169
170 DATA 11,141,61,3,96
```

—MICHAEL A. CORRIGAN, CARROLLTON, TX

\$4A9 ALARMING TIME-KEEPER 128

Time-Keeper 128 (see Easy Applications, March 1988) is a remarkably bullet-proof, 40- and 80-Column mode clock/calendar whose programmable alarm operates under a variety of conditions. While the program seems invincible, it cries out for the ability to reset the alarm before or after ringing. You can give it that capability by running a new program consisting of lines 5-9 and 21-34 of the boot program.

However, resetting the alarm in this manner zeroes the seconds on the clock after you've made the last alarm entry. To circumvent this, press return at the AM-PM setting just as the clock begins a new minute at 00 seconds.

Another problem is that on rare occasions the new program accidentally sounds the alarm immediately after you reset it. If it does, turn it off and reset it again. Finally, although the clock's characters are the same as the screen-character colors, you can use ESC and then T to set a window one line down from the top of the screen and use different character colors for the clock.

—RICHARD D. YOUNG, ORLEANS, ONTARIO, CANADA

\$4AA LOTTERY WINNER!

Lottery fans, rejoice! This program (compatible with all Commodores) produces non-repeating numbers randomly selected from a user-defined numeric range. You can direct its output to screen or printer.

```

Ø REM LOTTERY WINNER - JOSEPH R. CHARNETSK
I                                     :REM*9Ø
1Ø INPUT "{SHFT CLR}HOW MANY NUMBERS";T
                                     :REM*236
2Ø INPUT "LOWER LIMIT";L           :REM*6
3Ø INPUT "UPPER LIMIT";H           :REM*2Ø3
4Ø INPUT "(S)CREEN OR (P)RINTER";D$:REM*125
5Ø R=H-L+1:IF T>R THEN T=R         :REM*116
6Ø DIM N(T):IF D$="P" THEN OPEN4,4:CMD4
                                     :REM*2Ø2
7Ø FOR I=1 TO T                     :REM*86
8Ø S=INT(RND(.)*R+L)                :REM*56
9Ø FORJ=1 TO I                      :REM*58
1ØØ IFS<>N(J) GOTO 12Ø              :REM*64
11Ø J=I:GOTO 8Ø                     :REM*37
12Ø NEXT:PRINT STR$(I);CHR$(41);S  :REM*34
13Ø N(I)=S:NEXT                     :REM*188
14Ø IF D$="P" THEN PRINT#4:CLOSE4 :REM*164

```

—JOSEPH CHARNETSKI, DALLAS, PA

\$4AB ORGANIZING BBS DIRECTORIES

As a 65-year-old bulletin board sysop perched at the edge of the Smokies, I found Magic trick \$464 by Lou Wallace essential in my BBS work for writing Basic programs to disk as sequential files. I've expanded upon the trick and can now create linked directories for the bulletin section of my BBS.

Here's how it works: Place a BBS file disk with a hundred or more blocks free in your drive and enter:

```
LOAD"$",8
```

When the cursor reappears, *do not clear the screen*. Instead, type in the following:

```
OPEN8,8,8,"INDEX,S,W":CMD8:LIST
```

As soon as the cursor appears again, type in:

```
PRINT#8:CLOSE8
```

Now for the magic. Move the cursor back up to the LOAD"\$",8 command, which should still be visible at the top of your screen. Replace the first disk with the second disk to be organized, and press return. When the directory is finished loading, the cursor will appear over the Open statement above. Now put the first disk back in the drive and change the W to an A in the INDEX,S,W statement above and press return. Finally, press return again when the cursor reappears on the PRINT#8 statement.

By using this method, you can append the directories of all your 1541, 1571, 1581 and even SFD 1001 disks into one file. If you're lucky enough to have a two-drive system, you can change the Open statement to OPEN8,9,8 and keep the destination disk in drive 9 while loading directories from drive 8.

Of course, you'll need some way to view this sequential file. For screen or printer output, type in the following five lines, save them to disk and run as needed:

```

1 PRINTCHR$(147):INPUT"FILENAME OF FILE INDEX";F$
2 INPUT"PRINT Y/N";R$:D=3:IFR$="Y"THEN D=4:S=7
3 OPEN1,8,2,F$+"S,R":OPEN4,D,S:PRINTCHR$(147)
4 GET#1,A$:IFST=ØTHENPRINT#4,A$:WAIT198,1,1:POKE198,Ø:
  GOTO4
5 PRINT#4:CLOSE1:CLOSE4:INPUT"ANOTHER Y/N";Q$:IFQ$=
  "Y" THEN 1

```

—JIM SANDERS, KNOXVILLE, TN

\$4AC 1541 SOFTWARE SOUP-UP

Would you like to increase the speed of your disk drive's head movement? Just incorporate the following line in any program:

```
OPEN15,8,15:PRINT#15,"M-W"CHR$(7)CHR$(28)CHR$(1)
CHR$(15)
```

This command offers small increases in the speed of Validate, Rename and Scratch commands; all other drive commands are unaffected.

—BARRY SOLOMON, MONTROUSEVILLE, PA

\$4AD C-64 WORRY-FREE BINARY LOAD

A binary file is a machine language program or section of memory saved to disk and loaded into memory using the LOAD"FILENAME",8,1 syntax. Unfortunately, there are problems associated with loading programs using ,8,1 at the end of the Load statement. Its presence affects Basic pointers, interrupts the execution of other programs already in memory and causes numerous other maladies.

Whenever you need to load a binary file without disturbing existing memory configurations, use the following line in either Direct or Program mode:

```
OPEN1,8,1,"FILENAME,P,R":POKE780,Ø:SYS65493:CLOSE1
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$4AE COUNTING 1581 FILES

I recently discovered that my now-famous disk utility, File Counter (Magic, August 1987), wasn't compatible with the Commodore 1581 3 1/2-inch disk drive. I've revised the program into a new program called File Counter 1581. It's an essential tool for 1581 users. ►

MAGIC

Before using the program, be sure your 1581's disk is in the desired partition; then run my program. Since the 1581 possesses an impressive capacity of 295 files, counting a full 3½-inch disk requires two minutes. While that might not sound so fast, try manually counting all the files on a full directory. It's brutal!

```
Ø REM FILE COUNTER-LEO BRENNEMAN :REM*4Ø
5 PRINT "{SHT CLR} COUNTING 1581 FILES..." :REM*213
1Ø CLR:OPEN 2,8,96,"$Ø":REM CHANGE '8' TO :REM*212
'9' IF 1581 IS DRIVE #9 :REM*212
15 GET#2,A$,A$ :REM*2Ø9
2Ø GET#2,A$,B$:IFA$=""ANDB$=""THENCLOSE2:G :REM*1Ø8
OTO5Ø :REM*235
25 GET#2,A$,A$ :REM*92
3Ø FORJ=1TO27:GET#2,A$ :REM*78
35 IFA$=""THEN 2Ø :REM*48
4Ø NEXT:N=N+1:GOTO3Ø :REM*184
45 CLOSE2
5Ø PRINT"THE ARE"N"FILES ON THIS DISK."
```

—LEO W. BRENNEMAN, ERIE, PA

\$4AF PRINTING 1581 PIC DEMOS

Any C-128 user who has a 1581 disk drive, a second drive and a copy of the C-128 Screen Dump program published in the March 1987 issue of *RUN* can print out some of those fabulous screens from the 1581 Pic Demo.

In 80-Column mode, load Pic Demo 128 from the 1581 Demo disk that came with your drive. Next, switch to 40-Column mode with ESC X. When the picture you want to print scrolls into sight, press the run-stop key. Now switch the video monitor to 80-Column mode, and load and run C-128 Screen Dump from your second drive.

Press ESC X to return to the 40-column screen again, and press F8 to print your hi-res screen. After printing, you should continue running Pic Demo 128 so that the 1581 will exit that partition and return to the root directory.

—TERRY J. JININGS, PLATTSMOUTH, NE

\$4BØ A CURE FOR THE DATA STATEMENT BLUES

Countless C-64 users will appreciate this sure-fire cure for finding those Out-of-Data and Error-in-Data-Statement problems. Just place the following routine at the end of any program, such as *RUN*'s Checksum, that contains Data statements:

```
300 FOR Z=1TO25Ø:READA:PRINT(PEEK(64)*256)+PEEK(63),A
310 GET X$IF X$="" THEN 31Ø
320 GOTO 300
```

This is a remarkably flexible routine. I begin this program with line number 300 because *RUN*'s Checksum ends well before line 300, but you can use any line number desired, as long as it's higher than the program's last line number. The 250 in the For-Next loop can be any number larger than the number of Data statements. If you're unsure, use a large number such as 50000.

After installing this routine, enter RUN 300 (the first line number in the routine) and press return. The first line number containing Data statements appears, followed by the first Data statement. Check it against the magazine listing for errors, then press a key to examine the next line number and Data statement.

If you find an error, press the run-stop key and list the line in error. Make the correction and enter GOTO 300 to continue. When you're finished, delete the routine by entering its line numbers and pressing return. You can then run your program normally.

—DAVE GOSS, KANSAS CITY, MO

\$4B1 HELP=UNNEW 128

If you've ever experienced the agony of entering the New command, only to discover you hadn't saved the program first, then you'll love this UnNew routine for your C-128. After loading and activating this utility, press the Help key any time you want to retrieve a program that you accidentally New'ed.

```
Ø REM C-128 UNNEW - LARRY S. ROBERTS :REM*45
1Ø FOR AD=512Ø TO 5233:READ DA:POKE AD,DA: :REM*187
CK=CK+DA:NEXT AD :REM*114
2Ø IF CK<>11Ø87 THEN PRINT"ERROR IN DATA": :REM*171
END :REM*114
3Ø SYS512Ø :REM*12Ø
4Ø DATA 76,21,2Ø,165,45,133,251,165,46,133 :REM*68
,252,16Ø,Ø,169,1,145,251,32 :REM*236
5Ø DATA 229,94,96,162,Ø,228,215,24Ø,2,2Ø8, :REM*14
14,32,66,193,24,162,1,16Ø,11 :REM*236
6Ø DATA 32,24Ø,255,76,54,2Ø,32,66,193,24,1 :REM*14
62,1,16Ø,3Ø,32,24Ø,255,32,125 :REM*2Ø2
7Ø DATA 255,85,78,78,69,87,32,79,78,32,18, :REM*47
72,69,76,8Ø,146,32,75,69,89,Ø :REM*236
8Ø DATA 169,Ø,169,97,133,252,169,2Ø,133,25 :REM*14
3,169,252,162,1Ø,16Ø,8,32,1Ø1 :REM*236
9Ø DATA 255,96,83,89,83,53,49,5Ø,51,13,1,Ø :REM*47
,Ø,Ø,Ø,51,44,5Ø,Ø
```

—LARRY S. ROBERTS, CASSELBERRY, FL

\$4B2 COMBINING C-64 PROGRAM LINES

Programmers occasionally need to combine lines of Basic 2.0 to conserve memory or to make room for more program lines. The following routine combines a line of Basic with the next line in a listing, up to 255 characters in length. Be careful not to exceed 255 characters, or you could lose the entire program. To safely use this routine, append it to the end of your program in the format as it appears below. And always place a Stop command in a line before the routine to prevent accidentally executing it. Run the sample program below to join line 20 with line 30.

```
Ø REM C-64 LINE JOINER - ROLF L. MILLER :REM*239
1Ø REM LINE 2Ø WILL JOIN WITH LINE 3Ø AFTE :REM*2Ø3
R RUNNING. :REM*99
2Ø PRINT"THIS WAS LINE 2Ø"; :REM*1Ø6
3Ø PRINT"THIS WAS LINE 3Ø"; :REM*5
59999 STOP :REM*43
6ØØØØ INPUT"LINE NUMBER TO APPEND";LN:A=2Ø :REM*246
49 :REM*246
6ØØ1Ø L=PEEK(A+2)+PEEK(A+3)*256 :REM*246
6ØØ2Ø A=PEEK(A)+PEEK(A+1)*256:IF L<>LN GOT :REM*2
O 6ØØ1Ø :REM*246
6ØØ3Ø FOR X=A-1 TO A+3:POKE X,58:NEXT:SYS ►
```


MAGIC

42291:STOP

:REM*212

—ROLF L. MILLER, VENTURA, CA

\$4B3 APPENDING C-64 BASIC PROGRAMS

Commodore 64 programmers and non-programmers alike frequently need to combine one program with another. Unfortunately, it's tedious work.

My program makes it a snap. Type in 64 Easy Append, save it to disk, then run it. Next, make sure the line numbers in the second program are higher than those in the first program. Use a renumbering utility if necessary. Load in the first program, then enter the following:

@LOAD"second program",8

"Second program" is, of course, the filename of the second program to be appended to the first. You'll find that 64 Easy Append runs until the computer is turned off.

```

Ø REM C-64 EASY APPEND - RICHARD PENN
                                     :REM*132
1Ø FOR T=679 TO 757:READD:POKET,D:CK=CK+D:
  NEXT                               :REM*111
2Ø IFCK<>8975THENPRINT"ERROR IN DATA...":E
  ND                                 :REM*31
3Ø SYS 747: PRINTCHR$(147)"TO APPEND: @LOA
  D "CHR$(34)"FILENAME"CHR$(34)",8"
                                     :REM*74
4Ø DATA 72,165,2,2Ø1,1,2Ø8,12,169,Ø,133,2,
  165,253,133,43,165,254,133       :REM*179
5Ø DATA 44,173,Ø,2,2Ø1,64,2Ø8,38,169,58,14
  1,Ø,2,56,165,45,233,2,133        :REM*73
6Ø DATA 251,165,46,233,Ø,133,252,165,43,13
  3,253,165,44,133,254,165,251     :REM*85
7Ø DATA 133,43,165,252,133,44,169,1,133,2,
  1Ø4,76,124,165,169,167,141,4     :REM*167
8Ø DATA 3,169,2,141,5,3,96        :REM*88

```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$4B4 ALL-PURPOSE 64 INSTRUCTION CREATOR

Anyone who has written a program requiring built-in instructions will appreciate my program, 64 Instruction Creator. What makes it unique is that no Print statements, Data statements or REMs are needed for the lines containing instructions, and they can be directed to the printer, disk or screen!

Examine the listing of 64 Instruction Creator, and you'll note that instructions can be placed anywhere following line 80. Try experimenting with the program, and you'll soon find it an indispensable utility for placing instructions in all the programs that you design.

```

Ø REM ALL-PURPOSE LISTER - NICKEY MACDONAL
  D                                 :REM*151
1Ø PRINT"{SHFT CLR}{CRSR DN}SCREEN, PRINTE
  R OR DISK (S,P,D)";             :REM*171
2Ø GETA$:DV=-3*(A$="S")-4*(A$="P")-8*(A$="
  D");IFDV=ØTHEN2Ø                :REM*16
3Ø PRINTA$:IFDV=8THENINPUT"FILENAME";FI$:O
  PEN5,DV,5,"Ø:"+FI$+"S,W":GOTO5Ø:REM*76
4Ø OPEN5,DV                        :REM*119
5Ø A$=CHR$(141)+"G{SHFT O}8Ø"+CHR$(13)
                                     :REM*171

```

```

6Ø FORZ=1TOLEN(A$):POKE63Ø+Z,ASC(MID$(A$,Z
  ,1)):NEXT:POKE198,Z-1           :REM*13
7Ø POKE22,35:CMD5:LIST1ØØ-        :REM*74
8Ø POKE22,25:PRINT#5:CLOSE5:PRINT"{CRSR UP
  }{1Ø SPACES}":PRINT"DONE.":END  :REM*85
9Ø INSTRUCTIONS FOR USAGE:         :REM*7
1ØØ YOU'LL BE ABLE TO SEND SAMPLE LINES
                                     :REM*156
11Ø SUCH AS THESE TO SCREEN, PRINTER OR
                                     :REM*84
12Ø DISK. REMOVE POKE 22,35 IN LINE 7Ø
                                     :REM*147
13Ø IF YOU WANT LINE NUMBERS.      :REM*77

```

—NICKEY MACDONALD, FREDERICTON, N.B., CANADA

\$4B5 EASY TYPO CORRECTION

Everyone's made mistakes typing in C-64 programs. My short interrupt-driven program will list an offending line to the screen so that you can cursor up to it, make the correction(s), press return, and then continue.

Be sure you save the program, because the New command in line 40 erases it once it has run.

```

Ø REM C-64 ERROR DETECTOR - BRET TIMMINS
                                     :REM*25Ø
1Ø FORT= 679 TO 745:READA:CK=CK+A:POKET,A:
  NEXT                             :REM*97
2Ø IF CK<> 7Ø27 THEN PRINT"ERROR IN DATA S
  TATEMENTS...":END               :REM*144
3Ø SYS 679                         :REM*179
4Ø NEW: REM SAVE THIS PROGRAM BEFORE RUNNI
  NG!                             :REM*254
5Ø DATA 169,188,141,Ø,3,169,2,141,1,3,169,
  214,141,2,3,169,2,141,3         :REM*22Ø
6Ø DATA 3,96,36,157,16,3,76,139,227,224,29
  ,176,249,165,57,133,2Ø,165     :REM*237
7Ø DATA 58,133,21,169,1,141,233,2,2Ø8,234,
  173,233,2,2Ø8,3,76,131         :REM*178
8Ø DATA 164,169,Ø,141,233,2,32,19,166,76,2
  Ø1,166,Ø                        :REM*235

```

—BRET M. TIMMINS, SANDY, UT

\$4B6 SYMMETRIC C-128 MOIRE PATTERNS

Moire patterns consist of closely knit lines that form beautiful computer-generated designs. Here's a short program for the C-128 in 40-Column mode that creates dazzling random moire patterns. Watching this program form the lines is also an unexpected delight.

```

Ø REM SYMMETRIC MOIRE - BOB HOFER :REM*2Ø8
1Ø GRAPHIC1,1:COLORØ,1:COLOR1,2:COLOR4,1
                                     :REM*6Ø
2Ø X=32Ø:Y=2ØØ                     :REM*61
3Ø C=X*ØND(Ø):D=Y*ØND(Ø)           :REM*15
4Ø A=Ø:B=Ø:J=Ø:K=1:N=2:P=1        :REM*12
5Ø DRAW K,A,JTOC,DTOA,Y            :REM*23Ø
6Ø DRAW J,A+K,JTOC,DTOA+K,Y        :REM*6Ø
7Ø A=A+N:IFA<XTHEN5Ø               :REM*194
8Ø DRAW K,J,BTOC,DTOX,B            :REM*138
9Ø DRAW J,J,B+KTOC,DTOX,B+K        :REM*253

```

Continued on p. 88.

From p. 16.

```
100 B=B+N:IFB<YTHEN80          :REM*29
110 GETKEY$:GRAPHIC0:PRINT"PRESS ANY KEY
    TO CREATE NEW PATTERN.":GETKEY$:RUN
                                :REM*152
```

—ROBERT R. HOFER, BUFFALO, NY ■

Magic is a forum for RUN readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published. \$50 and a Magic Contributor T-shirt are awarded for the Trick of the Month.

MEGA-MAGIC

Salvage data from disks that you have accidentally reformatted.

DISK RESTORER

This pair of programs can retrieve files from disks you accidentally reformat with the OPEN15,8,15,"N0:<disk-name> command. Save Directory (Listing 1) reads track 18 (the directory track) of a disk you want to protect and saves the data as a sequential file on a second disk, perhaps the disk containing these programs. Later, if you accidentally reformat the protected disk, Restore Directory will write the sequential file back to track 18, thereby restoring the protected disk's files to use.

Type in both programs, using RUN's Checksum program. When you run Save Directory, it will prompt you to insert the disk you want to protect into the drive, press any key, then insert the disk that will hold the sequential file. The protected disk's name is used as the filename of the sequential file, and if there's a file of that name already on the sequential file disk, the program will ask if it's okay to delete it. If not, press N to exit the program; otherwise, press Y to go ahead and save the new file over the old one. Run Save Directory once for each disk you want to protect, swapping disks as prompted.

When you accidentally reformat a protected disk, load and

run Restore Directory. Then insert the sequential file disk (if it's other than the disk containing these programs) and enter the name of the protected disk. The program reads in the sequential file with that name, then sounds an alarm to remind you to place the protected disk in the drive. If you leave the file disk in the drive, you'll get two bad disks.

Note that these programs retrieve files only from disks reformatted with a short format command, which zeroes track 18 but leaves the files intact. If you reformat using a disk ID code, your files are actually erased and irretrievable.

Also bear in mind that changes to a disk after you save its directory won't be reflected in the sequential file. If a disk is important, resave its directory every time it's altered. Of course, if you don't resave the directory, Restore Directory can still recover some files.

In addition to restoring disk directories, these programs can be used to unscratch individual files on protected disks, as long as you do it right after the scratch operation. Just run Restore Directory, and, presto!—your file is back! ☐

—KENNY LAWSON, INDIANAPOLIS, IN

Listing 1. Save Directory program.

```
10 REM C-64 SAVE DIRECTORY - KENNY LAWSON          :REM*17
                                           :REM*119
20 POKE56,141:CLR                                  :REM*58
30 FORX=1TO12:D$=D$+CHR$(17):NEXT:FORX=1TO        :REM*152
    19:T$=T$+CHR$(32):NEXT
40 TB$=CHR$(19)+D$+T$                              :REM*5
50 POKE53280,0:POKE53281,0:PRINTCHR$(30):K        :REM*134
    B=198
60 PRINT"{SHIFT CLR}{CTRL 9}{6 SPACES}SAVE        :REM*224
    DISK BAM AND DIRECTORY{6 SPACES}"
70 PRINT"{5 CRSR DNs}INSERT DISK TO BE SAV        :REM*8
    ED, THEN PRESS"
80 PRINT"{CRSR DN}ANY KEY TO BEGIN THE PRO        :REM*86
    CESS.":POKEKB,0
90 GETA$:IFA$=""THEN90                             :REM*117
100 GOSUB370:REM READ DIRECTORY                  :REM*155
110 GOSUB210:PRINT"{SHIFT CLR}{4 CRSR DNs}N        :REM*16
    OW INSERT THE DISK YOU WISH TO SAVE"
120 PRINT"{CRSR DN}THE FILE ONTO, AND PRES        :REM*195
    S ANY KEY."
130 GETA$:IFA$=""THEN130                          :REM*230
140 REM SAVE DIRECTORY                            :REM*159
150 SA=36096:OPEN15,8,15:OPEN8,8,8,FI$+",S        :REM*161
    ,W":GOSUB260
160 PRINT"{SHIFT CLR}{10 CRSR DNs}{12 SPACE        :REM*213
    s}WRITING FILE..."
170 FORX=0TO255:A$=CHR$(PEEK(SA+X)):PRINT#        :REM*51
    8,A$;:NEXT
180 SA=SA+256:IFPEEK(SA)<>18THENFF=1              :REM*77
                                           :REM*77
190 FORX=0TO255:A$=CHR$(PEEK(SA+X)):PRINT#        :REM*104
    8,A$;:NEXT:IFFF=0THEN180
200 CLOSE8:PRINT#15,"I0":CLOSE15:END              :REM*41
                                           :REM*16
210 REM WARNING NOISE
220 POKE54296,15:POKE54295,0:MM=54272:POKE
```

RUN it right: C-64; disk drive

RUN

THE COMMODORE 64/128 USER'S GUIDE

August 1988

An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

Islands

Exciting C-64 Strategy Game!

Why You Need
A 1541 Fast-Loader

Plus:

- ▶ C-128 Net Worth Calculator
- ▶ Mom's Kitchen Aid
- ▶ Disk File Helper
- ▶ Video Poker



MAGIC

Create your own character sets; give your C-64 no-scroll ability;
use a 40/80-column toggle on your C-128.

Compiled by TIM WALSH

\$4B7 64 MAZE CRAZE

Anyone who likes computer maze games will have hours of fun with 64 Money Monger. All the mazes are different, since they're randomly generated each time you play. You

begin with 25 pieces of gold. Use the cursor keys to work your way through a maze, collecting gold pieces as you go. If you reach a dead end, you cannot retrace or backtrack. You can, however, press the space bar to blast your way through, but each blast will cost you three gold pieces. If you ▶

TRICK OF THE MONTH

\$4B8 MINI FONT EDITOR

Mini Font Editor provides four new SYS commands to use in creating your own character sets on the C-64. The fonts you can create are limited only by your imagination. You can also append Mini Font Editor to longer programs at the beginning of the listing.

The first two new SYS commands are different ways of creating characters. SYS DESIGN, screen code #, X1,X2,X3,X4,X5,X6,X7,X8, redefines the character specified by the screen code number. The eight variables (X1-X8) have values ranging from 0 to 255. For example, SYS DESIGN,1,255,0,255,0,255,0,255,0 redefines the letter A into a pattern of vertical lines.

The other method of creating characters is with SYS DRAW, screen code, which lets you draw a redefined character followed by eight lines consisting of a REM statement, an exclamation point, a quotation mark and any combination of eight spaces and asterisks followed by another quotation mark. Look at this example of how to redefine the letter A into a box.

```
300 SYS DRAW,1
310 REM !"*****"
320 REM !"***  ***"
330 REM !"***  ***"
340 REM !"***  ***"
350 REM !"***  ***"
360 REM !"***  ***"
370 REM !"***  ***"
380 REM !"*****"
```

The remaining commands are SYS COPY, for copying character sets, and SYS PLOT,X,Y, which positions the cursor anywhere on the screen. X is a value from 0-39 and Y is a value from 0-24.

```
0 REM C-64 MINI FONT EDITOR - RICHARD PENN :REM*168
10 FORT=49152 TO 49481:READD:POKET,D:CK=CK :REM*84
  +D:NEXT :REM*84
20 IF CK<>48480 THENPRINT"ERROR IN DATA ST :REM*180
  ATEMENTS":END :REM*180
30 COPY=49152:DESIGN=49201:DRAW=49230:PLOT :REM*105
  =49454
```

```
40 DATA 120,169,51,133,1,169,0,133,251,133 :REM*24
  ,253,169,223,133,252,169,63
50 DATA 133,254,160,0,177,251,145,253,136, :REM*114
  208,249,198,252,198,254,165
60 DATA 252,201,207,208,237,169,55,133,1,2 :REM*147
  4,169,29,141,24,208,96,32,220
70 DATA 192,160,8,152,72,160,0,32,241,183, :REM*42
  138,145,251,230,251,166,251
80 DATA 208,2,230,252,104,168,136,208,233, :REM*16
  96,32,220,192,165,122,133,253
90 DATA 165,123,133,254,32,211,192,32,211, :REM*131
  192,32,211,192,32,211,192,32
100 DATA 211,192,169,8,141,80,195,160,0,17 :REM*131
  7,253,201,143,208,88,32,211
110 DATA 192,177,253,240,81,201,33,208,245 :REM*173
  ,32,211,192,32,211,192,162,8
120 DATA 177,253,201,42,208,10,189,37,193, :REM*17
  17,251,145,251,76,162,192,169
130 DATA 255,56,253,37,193,49,251,145,251, :REM*88
  32,211,192,202,208,224,230,251
140 DATA 165,251,208,2,230,252,32,211,192, :REM*102
  32,211,192,32,211,192,32,211
150 DATA 192,32,211,192,32,211,192,206,80, :REM*192
  195,173,80,195,240,8,76,111
160 DATA 192,162,11,76,139,227,96,230,253, :REM*136
  165,253,208,2,230,254,96,32
170 DATA 241,183,134,251,142,82,195,169,0, :REM*162
  133,252,141,83,195,162,7,24
180 DATA 165,251,109,82,195,133,251,165,25 :REM*202
  2,109,83,195,133,252,202,208
190 DATA 238,169,0,141,82,195,173,24,208,2 :REM*250
  01,31,240,5,169,48,76,18,193
200 DATA 169,56,141,83,195,24,165,251,109, :REM*80
  82,195,133,251,165,252,109,83
210 DATA 195,133,252,96,175,1,2,4,8,16,32, :REM*15
  64,128,32,241,183,224,40,176
220 DATA 16,134,2,32,241,183,224,25,176,7, :REM*86
  164,2,24,32,240,255,96,162,14
230 DATA 76,139,227 :REM*92
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

exhaust your horde of gold pieces and cannot continue, press Q to get your score. If you consistently score above 65 percent, you are indeed a money monger!

```

Ø REM 64 MONEY MONGER - NICKEY MACDONALD
:REM*115
1Ø PRINT"{SHFT CLR}{CTRL 2}{CTRL 9}GOOD LU
CK!":POKE5328Ø,Ø:POKE53281,Ø:X=RND(-TI)
:REM*78
2Ø MC=3:IM=25:MN=IM:X1=2Ø:Y1=1:MV=1:WD=4Ø:
LN=24:SC=1Ø24:CO=55296 :REM*231
3Ø GOSUB18Ø :REM*119
4Ø POKECO+Y1*WD+X1,2:POKESC+Y1*WD+X1,174
:REM*8
5Ø GETA$:IFA$=""THEN5Ø :REM*13
6Ø IFA$="{CRSR DN}"THENDY=1:DX=Ø :REM*144
7Ø IFA$="{CRSR UP}"THENDY=-1:DX=Ø :REM*222
8Ø IFA$="{CRSR RT}"THENDX=1:DY=Ø :REM*48
9Ø IFA$="{CRSR LF}"THENDX=-1:DY=Ø :REM*188
1ØØ IFA$=" "ANDMN=MCTHENMN=MN-MC:POKESC+(
Y1+DY)*WD+X1+DX,32:GOSUB21Ø :REM*192
11Ø IFA$="Q"THENMN=MN-IM:MN=-MN*(MN>-1):GO
TO22Ø :REM*227
12Ø X=PEEK(SC+WD*(Y1+DY)+X1+DX):IFX=42THEN
MN=MN+1:GOSUB21Ø:GOTO14Ø :REM*142
13Ø IFX<>32THEN5Ø :REM*19Ø
14Ø X1=DX+X1:Y1=Y1+DY:MV=MV+1:IFY1<1THENY1
=Y1-DY :REM*136
15Ø IFX1<ØORX1>WD-2THENX1=X1-DX :REM*174
16Ø IFY1<LN-4THEN4Ø :REM*2ØØ
17Ø Y=Y-LN+6:Y1=Y1-LN+7:GOTO3Ø :REM*2
18Ø Y=Y+1:IFY=LNTHEN21Ø :REM*81
19Ø FORZ=1TOWD-1:PRINTMID$("{CTRL 2}{CTRL
8}*{CTRL 2}{SHFT N}{CTRL 2}{CTRL 2}{
SHFT M}{CTRL 2}{CTRL 2}{SHFT N}{CTRL
2}{SHFT M}{CTRL 2}{CTRL 2}{SHFT V}",I
NT(RND(1)*1Ø)*2+1,2); :REM*75
2ØØ :NEXT:PRINT:GOTO18Ø :REM*57
21Ø PRINT"{15 SPACES}{15 CRSR LFs}MONEY:"M
N:PRINT"{CRSR UP}";:RETURN :REM*36
22Ø PRINT"{SHFT CLR}YOU MADE $"MN"IN"MV"MO
VES,":PRINT"THAT'S"INT(MN*1ØØ*(MC-1)/M
V)"%":REM*6

```

—NICKEY MACDONALD, FREDERICTON, N.B., CANADA

\$4B9 64/128 NUMBER FORMATTER

Since Basic 2.0 and Basic 7.0 on the C-64 and C-128, respectively, lack a command for automatically printing large numbers with commas, I wrote Number Formatter to perform that task. Use it as a subroutine in your own programs and you'll find it'll format any positive or negative floating point number from 0.01 to 999999999.

```

Ø REM NUMBER FORMATTER - J. R. CHARNETSKI
:REM*21
1Ø INPUT"ENTER A NUMBER";N:IFN=ØTHENEND
:REM*242
2Ø GOSUB4Ø:PRINT:GOTO1Ø :REM*22Ø
3Ø :REM*88
4Ø N$=STR$(N):IFABS(N)<1ØØØGOTO9Ø :REM*236
5Ø X=3:L=LEN(N$):IFN=INT(N)GOTO8Ø :REM*174
6Ø FORJ=2 TO L:IF MID$(N$,J,1)=". "THENX=X+

```

```

L-J+1:J=L :REM*13Ø
7Ø NEXT :REM*2ØØ
8Ø IFX<L-1THENN$=LEFT$(N$,L-X)+","+RIGHT$(
N$,X):L=L+1:X=X+4:GOTO8Ø :REM*213
9Ø PRINTN$:RETURN :REM*172

```

—JOSEPH CHARNETSKI, DALLAS, PA

\$4BA How CONVE-E-ENIENT!

Good programmers always save the newest version of their creations under slightly different filenames as they work. And they save frequently. You can save time if you make your computer do this for you by tacking on my routine to your programs. For the C-64:

```

59999 END
60000 ZZ$="FAST SAVE":OPEN15,8,15,"SØ:"+ZZ$:SAVE""+
ZZ$,8:VERIFY""+ZZ$,8
60001 CLOSE 15:END

```

For the C-128:

```

59999 END
60000 ZZ$="FAST SAVE":SCRATCH""+ZZ$:DSAVE""+ZZ$:
DVERIFY""+ZZ$:END

```

Substitute your own filename for "FAST SAVE" and enter RUN 60000 whenever you want to save a program. This eliminates encountering the Save-with-Replace bug and filling your disk with partially completed program segments.

—E. STUART JOHNSON, ATHENS, AL

\$4BB PUTTING THE C-64'S BELL TO WORK

A Magic trick rang the C-64's pseudo-CTRL/G bell for the first time in January 1988 (Magic trick \$467) and for the second time in April 1988 (Magic trick \$48F). I'll ring it for the third and last time in this issue with a relocatable machine language routine.

Incorporate my bell program into your own programs to signal keyboard input, or perhaps to toll that all is either well or not well.

After you've run the program, type in SYS SA to activate the bell. Of course, you can change the value of SA to your preferred, least disturbed area of memory.

```

Ø REM PUT THE BELL TO WORK - ROLF L. MILLE
R :REM*217
1Ø SA=679:FORA=SA TO SA+3Ø:READD:POKEA,D:N
EXT:SYSSA :REM*43
2Ø DATA 169,31,141,24,212,169,9,141,5,212,
169,Ø,141,6,212 :REM*183
3Ø DATA 169,48,141,1,212,169,32,141,4,212,
169,33,141,4,212,96 :REM*3Ø

```

—ROLF L. MILLER, VENTURA, CA

\$4BC C-64 No-Scroll CONTROL

One of the many nice features of the C-128 is its no-scroll key. Located at the top of the keyboard, this key lets you freeze scrolling listings, disk directories and other screen data, and then resume scrolling when you're ready. Because it's so useful, I've created a no-scroll system for the C-64 called No-Scroll Control.

After activating my program, CTRL/S freezes scrolling. You can resume scrolling with the space bar. Pressing run-

MAGIC

stop/restore deactivates the program and entering SYS SA reactivates it.

```

Ø REM C-64 SCROLL CONTROL - KARL JOHNSON
                                :REM*44
1Ø SA=49152:FORM= SA TO SA+52:READN:CK=CK+
  N:POKEM,N:NEXT                :REM*25Ø
2Ø IF CK<>63ØØ THEN PRINT"ERROR IN DATA..."
  :END                          :REM*123
3Ø SYS SA:PRINT"{SHFT CLR}CONTROL SCROLL (
  CTRL-S) ACTIVATED. SPACEBAR CONTINUES L
  ISTING":END                   :REM*3Ø
4Ø DATA 12Ø,169,13,141,2Ø,3,169,192,141,21
  ,3,88,96,165,145,2Ø1,251,2Ø8   :REM*26
5Ø DATA 27,165,197,2Ø1,13,2Ø8,21,12Ø,169,4
  9,141,2Ø,3,169,234,141,21,3   :REM*111
6Ø DATA 88,165,197,2Ø1,6Ø,2Ø8,25Ø,32,Ø,192
  ,169,Ø,133,198,76,49,234     :REM*211
  
```

—KARL L. JOHNSON III, HOUSTON, TX

\$4BD LOOK AWAY, DIXIELAND

Dixie, an inspirational song written by Daniel Decatur Emmett in 1859, is a favorite among children of all ages. This version works on both the C-64 and the C-128. For a snappier tempo, run it in the C-128's Fast mode.

```

Ø REM DIXIE FOR THE 64 & 128 MODES - JOE C
  HARNETSKI                     :REM*253
1Ø DATA 112211112222231311115115115116
                                :REM*8Ø
2Ø DATA 54333344555455555556678656545343
                                :REM*38
3Ø DATA 24555946222488828285977929242945
                                :REM*254
4Ø CLR:READD$,IX$,IE$:R=54272:FORI=RTOR+23
  :POKEI,Ø:NEXT:POKER+12,9:POKER+24,15
                                :REM*7
5Ø FORJ=1TO32:POKER+8,VAL(MID$(IX$,J,1))*1
  Ø+VAL(MID$(IE$,J,1)):POKER+11,33
                                :REM*176
6Ø FORT=1TOVAL(MID$(D$,J,1))*128:NEXT:POKE
  R+11,32:FORZ=1TO2Ø:NEXT:NEXT :REM*52
7Ø PRINTCHR$(147)"PRESS SPACEBAR TO PLAY D
  IXIE AGAIN..."             :REM*137
8Ø GETA$:IFA$="" THEN 8Ø       :REM*79
9Ø PRINTCHR$(147):IFA$=CHR$(32) GOTO4Ø:END
                                :REM*6Ø
  
```

—JOSEPH CHARNETSKI, DALLAS, PA

\$4BE MORE NO-SCROLL CONTROL?

This program allows you to put a message on the C-64 screen without changing the current location of the cursor.

Add the subroutine in lines 60000-60040 to your program. To print a message, use the syntax:

X=(0 through 39): Y=(0 through 24):A\$="ANY MESSAGE DESIRED":GOSUB 60000

where X is the column coordinate and Y is the row coordinate for the position of your message in A\$.

```

Ø REM 64 NO-SCROLL CURSOR PLOT - RICHARD P
  ENN                           :REM*33
  
```

```

1Ø PRINTCHR$(147):PRINT"CURSOR IS HERE--->
  ";WAIT 198,1:GETA$           :REM*113
2Ø X=31:Y=24:A$="NO-SCROLL":GOSUB6ØØØØØ
                                :REM*83
3Ø WAIT 198,1:GETA$:PRINT"AND STAYS HERE"
                                :REM*123
4Ø END                          :REM*168
59999 REM NO SCROLL PLOT SUBROUTINE
                                :REM*2Ø1
6ØØØØ X1=PEEK(211):Y1=PEEK(214) :REM*2Ø8
6ØØ1Ø PRINT"{HOME}":F=1Ø24+X+Y*4Ø:H=INT(F/
  256):L=F-H*256:POKE2Ø9,L:POKE21Ø,H
                                :REM*42
6ØØ2Ø PRINTA$                  :REM*16
6ØØ3Ø POKE 211,X1:POKE 214,Y1:PRINT"{CRSR
  UP}{CRSR DN}                 :REM*2Ø2
6ØØ4Ø RETURN                   :REM*253
  
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$4BF REVERSING C-128 HI-RES SCREENS

Reversing a hi-res image on the C-128's screen isn't easy; in fact, it's downright difficult. To make the job easier, I'm offering the C-128 Hi-Res Screen Reverser. You define the top-left corner coordinate values of X and X1 (0-39) and Y and Y1 (0-24). After defining your coordinates, entering SYS 4864,X,Y and SYS 4871,X1,Y1 reverses that area of the screen.

```

Ø REM C-128 SCREEN HI-RES SCREEN REVERSER
  - ROBERTO HIRSCH              :REM*11
1Ø FOR X=4864 TO 5Ø44:READ A:CK=CK+A:POKE
  X,A:NEXT                     :REM*59
2Ø IF CK<> 244Ø2 THEN PRINT"ERROR IN DATA.
  ..":END                      :REM*2Ø4
3Ø DATA 133,25Ø,133,254,134,251,96,133,252
  ,134,253,165,251,141,241,17   :REM*252
4Ø DATA 74,74,24,1Ø9,241,17,141,241,17,165
  ,251,1Ø,1Ø,1Ø,1Ø,1Ø         :REM*85
5Ø DATA 1Ø,141,24Ø,17,169,Ø,141,246,17,169
  ,32,36,25Ø,24Ø,5,169        :REM*111
6Ø DATA 1,141,246,17,165,25Ø,1Ø,1Ø,1Ø,141,
  245,17,24,173,24Ø,17        :REM*195
7Ø DATA 1Ø9,245,17,141,243,17,169,32,1Ø9,2
  41,17,1Ø9,246,17,141,244    :REM*41
8Ø DATA 17,173,243,17,141,1Ø2,19,141,1Ø7,1
  9,173,244,17,141,1Ø3,19     :REM*42
9Ø DATA 141,1Ø8,19,162,Ø,189,248,6Ø,73,255
  ,157,248,6Ø,232,224,8       :REM*166
1ØØ DATA 2Ø8,243,165,25Ø,197,252,24Ø,5,23Ø
  ,25Ø,76,36,19,165,254,133   :REM*19
11Ø DATA 25Ø,23Ø,251,162,Ø,238,24Ø,17,232,
  173,24Ø,17,2Ø1,Ø,2Ø8,3      :REM*185
12Ø DATA 238,241,17,224,Ø,2Ø8,238,162,Ø,23
  8,24Ø,17,232,173,24Ø,17    :REM*112
13Ø DATA 2Ø1,Ø,2Ø8,3,238,241,17,224,64,2Ø8
  ,238,165,251,197,253,2Ø8    :REM*228
14Ø DATA 1,96,76,36,19       :REM*178
15Ø COLOR Ø,2:COLOR 1,1:GRAPHIC 1,1 :REM*8
16Ø X=1:Y=1:X1=1Ø:Y1=1Ø      :REM*174
17Ø SYS4864,X,Y:SYS 4871,X1,Y1 :REM*153
  
```

—ROBERTO HIRSCH, PANAMERICANA, ARGENTINA

Continued on p. 81.

MAGIC

From p. 11.

\$4C0 DEVICE NUMBER CHANGER

Most computerists who use a 1541 as a second drive aren't too anxious to fiddle with the wiring in order to give it a different, permanent device number. Here's an alternative command that temporarily changes the device number through software:

```
PRINT#15;"M-W"CHR$(119)CHR$(0)CHR$(2)CHR$(new device
#+32)CHR$(new device #+64)
```

Although you may use any device number from 8 to 30, most software recognizes only device numbers 8, 9, 10 and 11.

—BILL DOYLE, COPPERAS COVE, TX

\$4C1 ALTERNATIVE WRITE-PROTECT TABS

If you use peelable address labels, cut a few into eight equal parts. You'll have a small supply of write-protect tabs for your disks.

—HAL SCHEIDT, BREMERTON, WA

\$4C2 MAGICAL C-128 MESSAGES

Making program instructions appear on the C-128's screen is easy using Print statements, but the following program offers a better way. Experienced programmers will note that most of the lines are illegal and normally would grind a program to a halt faster than you can say "Syntax error." However, running the program lists the lines without line numbers so they aren't executed.

```
0 REM MAGIC C-128 MESSAGES - KEVIN QUINN
:REM*19
10 Q$=CHR$(147)+CHR$(17)+CHR$(17) :REM*9
20 PRINTQ$:POKE24,37:LIST 30-50:POKE24,27:
GOTO 60 :REM*22
30 LINES 10 & 20 GIVE YOU A NEW WAY TO
:REM*56
40 LIST MESSAGES TO THE SCREEN. PRESS
:REM*194
50 ANY KEY TO CONTINUE... :REM*121
60 GETKEY$:PRINTQ$:POKE 24,37:LIST70-:POK
E 24,27:END :REM*72
70 YOU'RE CERTAIN TO FIND THIS PROCESS
:REM*152
80 OF WRITING SCREEN INSTRUCTIONS EASY
:REM*234
90 TO USE. :REM*159
```

—KEVIN QUINN, INTERLAKEN, NJ

\$4C3 40/80 AUTO TOGGLE

Commodore 128 users will enjoy this remarkable Magic trick. After loading and running this program, press ESC X to switch from 80- to 40-Column mode and automatically place the computer into Slow mode. Press ESC X again to enter 80-Column and Fast modes.

```
0 REM ESC-X ENHANCEMENT - LARRY S. ROBERTS
:REM*118
10 FOR AD=3072 TO 3104:READ DA:POKE AD,DA:
CS=CS+DA:NEXT AD :REM*242
20 IF CS<>3769 THEN PRINT"ERROR IN DATA":E
ND :REM*8
30 SYS 3072 :REM*139
```

```
40 DATA 120,169,13,141,20,3,169,12,141,21,
3,88,96,165,215,201,128,240 :REM*120
50 DATA 6,32,196,119,76,101,250,32,179,119
,76,101,250,255,32 :REM*129
```

—LARRY S. ROBERTS, CASSELBERRY, FL

\$4C4 C-128 SEQUENTIAL FILE VIEWER

You can easily view the contents of any sequential file using a C-128 and a disk drive. Just enter the following:

```
10 DOPEN#1,"filename":DO:GET#1,A$:PRINTA$;LOOP UNTIL
A$=""OR A$=CHR$(199):CLOSE1:END
```

For the best screen viewing, use 80-Column mode. Of course, you'll have to substitute the name of the sequential file for "filename" in the listing. Use the Commodore logo key to slow list scrolling and the no-scroll key to pause the program.

—ROB KENNEDY, WINNIPEG, MANITOBA, CANADA

\$4C5 EVERY WHICH WAY BUT LOOSE

Commodore printers produce left and up arrows and no others. The following program lets your Commodore-compatible printer produce arrows that point in any of eight directions. In either 64 or 128 mode, you'll be able to print arrows that point up, down, left and right, and also arrows that point 45 degrees from the horizontal axis. You can modify the program to place any combination of arrows anywhere you want.

```
0 REM ARROW PRINTER - JOE CHARNETSKI
:REM*205
10 A$=CHR$(129):B$=CHR$(130):C$=CHR$(134):
D$=CHR$(136):E$=CHR$(138) :REM*79
20 F$=CHR$(144):G$=CHR$(8):H$=CHR$(146):I$
=CHR$(158):J$=CHR$(160) :REM*120
30 K$=CHR$(164):L$=CHR$(168):M$=CHR$(176):
N$=CHR$(188):O$=CHR$(15) :REM*0
40 A$="{UP ARROW}":A2$=G$+CHR$(192)+J$+H$+
E$+C$+I$+O$ :REM*97
50 A3$=G$+D$+D$+D$+CHR$(170)+CHR$(156)+D$+
O$:A4$=G$+A$+B$+K$+L$+M$+N$+O$ :REM*237
60 A5$=G$+CHR$(128)+F$+J$+CHR$(255)+J$+F$+
O$:A6$=G$+N$+M$+L$+K$+B$+A$+O$ :REM*107
70 A7$="{LEFT ARROW}":A8$=G$+I$+C$+E$+H$+J
$+CHR$(192)+O$ :REM*133
80 OPEN4,4,7:PRINT#4,A8$" "A1$" "A2$:PRINT
#4,A7$"{3 SPACES}"A3$ :REM*207
90 PRINT#4,A6$" "A5$" "A4$:CLOSE4 :REM*205
```

—JOSEPH CHARNETSKI, DALLAS, PA ■

Magic is a forum for RUN readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month.

► Recreate Famous Battles on Your C-64

RUN

THE **COMMODORE** 64/128 USER'S GUIDE

September 1988
An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

You Can Become a Power User!

How to Turn Your
Fantasy into Reality

Attention, New Owners:
Guidelines on Getting Started

Plus:

- Inertia Mania Arcade Action
- Card Shark 64/128
- Spelling Challenge
- C-64/128 Vacation Checklist



MAGIC

Save your listings automatically; use a program that can temporarily re-align your disk drive; make cheap, sturdy peripheral stands.

Compiled by TIM WALSH

\$4C6 C-64 JOYSTICK READER

Unlike most joystick utilities, which read only one port, my program reads input from both ports when called with a SYS command. Use Joystick Reader as a routine in your

own programs, and you'll find this relocatable program to be one of the best joystick utilities around.

If you don't program, you can still use Joystick Reader to test joystick ports and joysticks. Just load and run it. You'll get a demo with a ball on the screen that a joystick in either ►

TRICK OF THE MONTH

\$4C7 AUTOSAVE 64

I sometimes lose my concentration when I need to save a listing I'm typing in or a program I'm creating, so I wrote Autosave 64, an interrupt-driven utility that automatically scratches, saves and verifies my work for me. I don't even have to memorize the filename.

Type in Autosave 64 with RUN's Checksum and save it. When you're ready to work, run Autosave 64 first. You'll be asked to enter the name of the program, after

which you press return when you see SYS 850 appear on the screen.

Now you can start typing. When you want to save the listing, just press the Commodore logo and control keys together. When the cursor reappears, list the program and continue typing. If you're working on a long program, prevent memory conflicts by pressing run-stop/restore, then enter SYS 850 before using Autosave 64.

```
0 REM AUTO-SAVE 64 - C. J. SIMS :REM*26
10 POKE 644,148:POKE 643,0 :REM*52
20 FOR A=828 TO 991:READ DT:POKE A,DT:SM=
SM+DT:NEXTA :REM*129
30 FOR A=38144 TO 38259:READ DT:POKE A,DT
:SM=SM+DT:NEXTA:IF SM<>16632 THEN 140
:REM*103
40 INPUT "ENTER FILENAME ->":A$ :REM*235
50 X=LEN(A$):IF X<1 OR X>10 THEN PRINT "<
MIN 1 CHR/MAX 10 CHRS>":GOTO 40:REM*53
60 GOSUB 150 :REM*136
70 LN=LEN(OP$):FOR A=1 TO LN:CHR=ASC(MID$
(OP$,A,1)):POKE 38161+A,CHR:NEXTA
:REM*73
80 LN=LEN(SA$):FOR A=1 TO LN:CHR=ASC(MID$
(SA$,A,1)):POKE 38197+A,CHR:NEXTA
:REM*65
90 LN=LEN(VR$):FOR A=1 TO LN:CHR=ASC(MID$
(VR$,A,1)):POKE 38234+A,CHR:NEXTA
:REM*211
100 FOR ZP=38162 TO 38256:CK=PEEK(ZP):IF
CK=0 THEN POKE ZP,1 :REM*246
110 NEXT ZP:POKE 917,149:PRINT "{SHFT CLR
}{CRSR DN}{2 CRSR RTS}* SYS 850 TO IN
STALL" :REM*201
120 PRINT "{2 SPACES}* C= + CTRL{2 SPACES
}TO ACTIVATE" :REM*71
130 PRINT "{2 SPACES}* RUN/STOP + RESTORE
TO DEACTIVATE":PRINT"{3 CRSR DNs}SYS
850{3 CRSR Ups}":NEW :REM*203
140 PRINT "ERROR IN DATA STATEMENTS!":END
:REM*146
```

```
150 OP$=A$+CHR$(34)+" :CLOSE 15:" :REM*141
160 SA$=A$+CHR$(34)+" ,8" :REM*42
170 VR$=A$+CHR$(34)+" ,8:" :REM*1
180 RETURN :REM*67
190 DATA 169,32,160,0,162,1,153,0,4,153,0
,5,153,0,6,153,0,7,136,208 :REM*234
200 DATA 241,96,32,60,3,160,0,185,185,3,2
01,0,240,7,32,210,255,200,76 :REM*171
210 DATA 87,3,169,113,141,20,3,169,3,141,
21,3,234,96,32,120,3,76,49 :REM*57
220 DATA 234,234,173,141,2,201,6,208,3,32
,132,3,96,234,169,49,141,20,3:REM*160
230 DATA 169,234,141,21,3,32,60,3,160,0,1
85,0,150,201,0,240,7,32,210 :REM*102
240 DATA 255,200,76,147,3,169,13,141,119,
2,169,13,141,120,2,169,13,141:REM*105
250 DATA 121,2,169,3,133,198,76,101,3,234
,234,142,19,17,17,17,29,29,29 :REM*98
260 DATA 29,83,65,86,69,32,45,32,85,84,73
,76,32,32,73,78,83,84,65,76 :REM*134
270 DATA 76,69,68,0,234,234,0,0,0,0,19,
79,80,69,78,32,49,53,44,56,44:REM*135
280 DATA 49,53,44,34,83,48,58,0,0,0,0,0,0
,0,0,0,0,0,0,0,19,17,17,17,83,65,86
,69,32,34,0,0,0,0,0,0,0,0,0:REM*238
300 DATA 0,0,0,0,0,0,0,0,0,0,19,17,17,1
7,17,17,17,86,69,82,73,70 :REM*254
310 DATA 89,32,34,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,19,0,0,0 :REM*139
```

—CEDRIC J. SIMS, BRYAN, TX

M A G I C

port can move about. Press the fire-button to end the demo and list the program to the screen.

```

Ø REM JOYSTICK READER - MICHAEL MYERS
:REM*29
1Ø AD=828:FORJ=AD TO AD+36:READQ:POKEJ,Q:N
EXT :REM*51
2Ø PRINTCHR$(147):X=1524:POKEX,81 :REM*65
3Ø FB=Ø:JS=Ø:SYSAD:FB=PEEK(253):JS=PEEK(25
4) :REM*5Ø
4Ø IF FB+JS=Ø THEN 3Ø :REM*68
5Ø Y=X:POKEX,32:IF FB THEN POKE 198,Ø:LIST
:REM*121
6Ø IF JS=1THENX=X-4Ø: REM UP :REM*192
7Ø IF JS=2THENX=X+4Ø: REM DOWN :REM*18
8Ø IF JS=4THENX=X-1: REM LEFT :REM*35
9Ø IF JS=5THENX=X+1: REM UP & LEFT
:REM*197
1ØØ IF JS=6THENX=X+39: REM DOWN & LEFT
:REM*224
11Ø IF JS=8THENX=X+1: REM RIGHT :REM*194
12Ø IF JS=9THENX=X-39: REM UP & RIGHT
:REM*76
13Ø IF JS=1ØTHENX=X+41: REM DOWN & RIGHT
:REM*156
14Ø IF X<1Ø24 OR X>2Ø23 THEN X=Y :REM*135
15Ø POKEJ,81:GOTO3Ø :REM*149
16Ø DATA 169,Ø,133,253,133,254,173,Ø,22Ø,2
Ø1,127,2Ø8,7,173,1,22Ø :REM*12Ø
17Ø DATA 2Ø1,255,24Ø,16,72,41,16,73,16,24Ø
,2,133,253,1Ø4,41,15 :REM*93
18Ø DATA 73,15,133,254,96 :REM*58

```

—MICHAEL MYERS, BEARDSTOWN, IL

\$4C8 BINARY FILE EXAMINER

Binary, or machine language, files are saved to disk in addresses that permit them to be reloaded into specified sections of memory. As your programming skills grow, you'll need to know where a file resides before you can load it into memory.

That's where my 64- and 128-compatible program, Binary File Examiner, comes in. Use it to examine any binary file on disk, and it will report the file's starting and ending addresses. It will also report the low- and high-byte pointers to the addresses and the total number of bytes contained in the file.

```

Ø REM BINARY FILE EXAMINER - JOSEPH CHARNE
TSKI :REM*112
1Ø INPUT"ENTER FILENAME";F$:IFF$="" THEN E
ND :REM*254
2Ø OPEN15,8,15,"IØ":OPEN2,8,8,F$ :REM*183
3Ø GOSUB12Ø:SL=ASC(L$+CHR$(Ø)):SH=ASC(H$+C
HR$(Ø)):S=SL+256*SH :REM*91
4Ø PRINT"{CRSR DN}STARTING ADDRESS= "S
:REM*119
5Ø PRINT"{CRSR DN}LOW BYTE="SL" HIGH BYTE=
"SH :REM*34
6Ø INPUT"{CRSR DN}DO YOU WANT ENDING ADDRE
SS (Y/N)";A$:IFA$<>"Y"THEN14Ø :REM*72
7Ø GET#2,B$:IFST=ØTHENC=C+1:GOTO7Ø:REM*155

```

```

8Ø EA=S+C:EH=INT(EA/256):L=EA-256*EH
:REM*125
9Ø PRINT"{CRSR DN}ENDING ADDRESS="EA
:REM*199
1ØØ PRINT"{CRSR DN}LOW BYTE= "L" HIGH BYTE
="EH :REM*9Ø
11Ø PRINT"{CRSR DN}TOTAL BYTES OF FILE="C+
1:GOTO14Ø :REM*22Ø
12Ø INPUT#15,E,E$,ET,ES:IFE=ØTHENGET#2,L$,
H$:RETURN :REM*196
13Ø PRINT;E$;ET;ES :REM*75
14Ø CLOSE2:CLOSE15 :REM*247

```

—JOSEPH CHARNETSKI, DALLAS, PA

\$4C9 C-64 BINARY FILE HANDLER

While the C-64 lacks a BLoad command, you can still easily load a binary file from disk with C-64 Binary File Handler, which lets you load a binary file into any address and then calculates the low and high bytes of the new starting address for you. This routine is also a practical complement to the Binary File Examiner program above.

```

Ø REM C-64 LOAD RELOCATOR - RICHARD PENN
:REM*185
1Ø INPUT"FILENAME";A$:A$=A$+",P,R" :REM*31
2Ø INPUT"NEW STARTING ADDRESS";SA:H=INT(SA
/256):L=SA-(256*H) :REM*11Ø
3Ø OPEN 1,8,1,A$:POKE185,Ø:POKE78Ø,Ø:POKE7
81,L:POKE782,H:SYS65493:CLOSE1 :REM*189

```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$4CA C-64 DOS 5.1 AUTO-COPY

Ask C-64 users which disk utility they rely on the most, and they'll probably tell you Commodore's DOS Wedge (DOS 5.1). It comes on the 1541 and 1571 Test Demo disks and shortens the lengthy syntax of disk commands to a few characters.

However, copying this pure machine language program to other disks can be a headache for the beginner. Either a file copier or a machine language monitor to copy the program is necessary. That's why I wrote DOS 5.1 Auto-Copy, which automatically saves a copy of DOS 5.1 to disk.

To use it, run the C-64 Wedge program, then type in and run my program. Place a work disk in the drive and press the @ key followed by the — key, and DOS 5.1 will be saved to disk. Finally, copy the C-64 Wedge Loader Basic program to the same work disk. Repeat this process for each disk that you want to contain a copy of DOS 5.1.

```

Ø REM DOS 5.1 AUTO SAVE - BRET TIMMINS
:REM*72
1Ø FORT=5312Ø TO 53191:READ A:CK=CK+A:POKE
T,A:NEXT :REM*247
2Ø IF CK <> 1ØØ74 THEN PRINT"ERROR IN DATA
...":END :REM*219
3Ø POKE 52235,2Ø7:POKE 52246,127 :REM*14
4Ø PRINT"ENTER "CHR$(64)CHR$(95)" TO SAVE
MODIFIED DOS 5.1" :REM*185
5Ø DATA 14Ø,199,2Ø7,142,198,2Ø7,173,39,2Ø4
,2Ø1,95,24Ø,9,174,198,2Ø7,172 :REM*225

```


MAGIC

```
60 DATA 199,207,76,72,205,169,0,141,39,204
,162,8,160,97,32,186,255 :REM*245
70 DATA 162,191,160,207,169,7,32,189,255,1
69,0,133,195,169,204,133,196 :REM*35
80 DATA 169,195,162,255,160,207,32,216,255
,76,144,205,68,79,83,32,53 :REM*137
90 DATA 46,49,0,0,256 :REM*230
```

—BRET M. TIMMINS, SANDY, UT

\$4CB MODIFIED BLANK-IT! 64

My program, a modified version of Blank-It! 64 (Mega-Magic, January 1988) uses the F1 key to toggle between a blank screen and the display screen to prevent screen burn. Since the blank screen gives the impression that the monitor is off, I changed the screen color to dark gray to show that the monitor is still on.

When you run the program, it will write a machine language file to disk called BLANK-IT (910). Type in "BLANK-IT (910)", 8,1 and then the SYS 910 command to run the program.

If you'd like to change the color of the blank screen, enter POKE 955,X, where X, your screen color, ranges from 0 to 15. To use the F3, F5 or F7 function keys to activate the routine, type in POKE 938,X, where X is 5, 6 or 3, respectively (F1 is 4).

```
0 REM MODIFIED BLANK-IT 64 - BILL FISHER :REM*228
10 C$=CHR$(34):PRINTCHR$(147) "FILE WRITER :REM*147
FOR MODIFIED BLANK-IT." :REM*147
20 PRINT"{CRSR DN}INSERT FORMATTED WORK DI :REM*95
SK" :REM*95
30 PRINT"{CRSR DN}THEN PRESS RETURN" :REM*31
40 GETK$:IFK$<>CHR$(13)THEN40 :REM*229
50 PRINTCHR$(17);" WORKING..." :REM*8
60 OPEN5,8,2,"0:BLANK-IT (910),P,W" :REM*144
:REM*144
70 PRINT#5,CHR$(142);CHR$(3); :REM*104
80 FORX=1TO111 :REM*159
90 READ Y:PRINT#5,CHR$(Y); :REM*179
100 NEXTX :REM*151
110 CLOSE5 :REM*121
120 PRINTCHR$(147)"{2 CRSR DNs}NOW LOAD "C :REM*16
$"BLANK-IT (910)"C$",8,1" :REM*16
130 PRINTCHR$(17);"{2 CRSR DNs}SYS 910 TO :REM*172
ACTIVATE - SYS 1006 TO STOP" :REM*172
140 DATA 120,173,20,3,172,21,3,141,236,3,1 :REM*174
40,237,3,169,167,160,3,141,20 :REM*174
150 DATA 3,140,21,3,88,96,165,197,201,4,20 :REM*204
8,42,173,17,208,41,16,240,38 :REM*204
160 DATA 173,32,208,141,235,3,169,11,141,3 :REM*230
2,208,173,17,208,41,239,141,17:REM*230
170 DATA 208,169,255,133,251,169,255,133,2 :REM*244
52,198,252,208,252,198,251,208:REM*244
180 DATA 244,108,236,3,173,235,3,141,32,20 :REM*37
8,173,17,208,9,16,141,17,208 :REM*37
190 DATA 76,199,3,243,49,234,120,173,236,3 :REM*74
,172,237,3,141,20,3,140,21,3 :REM*74
200 DATA 88,96 :REM*113
```

—BILL FISHER, ARMONK, NY

\$4CC REVERSE KN-KN-KN-KNOCKER!

If your 1541 or 1571 disk drive hasn't been behaving well lately, it may be out of alignment. You could take it to a repair shop, but before you shell out \$40 or \$50, try "knocking" some sense into it with my Reverse Knocker program.

This 64- and 128-mode program reverse-knocks the drive head 100 times, which may re-align the drive just enough to postpone an expensive realignment. Be forewarned: have an old work disk in the drive when you run it, and don't worry if running this program makes your disk drive sound like a smoldering Buddy Rich drum solo. It is a noisy program, but if you type it in correctly, it won't hurt the drive or disk at all.

```
0 REM REVERSE KNOCK YOUR DRIVE - STEPHEN C :REM*225
HEUNG :REM*225
10 OPEN15,8,15,"I" :REM*27
20 SP=1:FORI=1 TO 100:GOSUB40:NEXT :REM*35
30 FORI=1 TO 20:SP=-1:GOSUB40:NEXT:PRINT"A :REM*131
LL DONE!":PRINT#15,"I":CLOSE15:END :REM*131
40 PRINT#15,"M-R"CHR$(0)CHR$(28):GET#15,A$ :REM*90
:A=ASC(A$+CHR$(0)):BI=A AND 3 :REM*90
50 BI=BI+SP:BI=BI AND 3 :REM*7
60 R=(A AND 252) OR BI:PRINT#15,"M-W"CHR$( :REM*219
0)CHR$(28)CHR$(1)CHR$(R):RETURN:REM*219
```

—STEPHEN CHEUNG, DEER PARK, NY

\$4CD ENVELOPE ADDRESSER

When was the last time you wrote a letter with your word processor, then mailed it in an envelope with a hand-written address? Envelope Addresser, a short C-128 and C-64 program, prints both yours and the receiver's address on business and standard envelopes.

Place your address in lines 50 through 80. If the return address is only three lines, delete line 80. When you run the program, you'll be prompted for the envelope size and for up to four lines of the addressee's address.

```
0 REM ENVELOPE ADDRESSER - JOHN E. MILLER :REM*73
:REM*73
10 DIMA$(4),B$(4):K=45:PRINTCHR$(147) :REM*191
:REM*191
20 PRINT"STANDARD OR BUSINESS ENVELOPE? (S :REM*120
/B)" :REM*120
30 GET T$:IF T$<>"S" ANDT$ <>"B"THEN30 :REM*242
:REM*242
40 IF T$="S"THEN K=30 :REM*66
50 A$(1)="YOUR NAME" :REM*118
60 A$(2)="YOUR STREET ADDRESS" :REM*117
70 A$(3)="YOUR CITY & STATE" :REM*105
80 A$(4)="YOUR ZIP CODE" :REM*86
90 PRINT:PRINTTAB(10)"RECEIVER'S ADDRESS": :REM*74
PRINT :REM*74
100 FORJ=1 TO 4:PRINT"LINE #J";POKE 198,1 :REM*44
:POKE631,34:INPUTB$(J):NEXT :REM*44
110 OPEN4,4:FORI=1TO4:PRINT#4,SPC(2)A$(I): :REM*191
NEXT:CLOSE4 :REM*191
120 OPEN4,4:PRINT#4,SPC(240):FORI=1 TO J-1
```

Continued on p. 89.

MAGIC

From p. 12.

```
:PRINT#4,SPC(K)B$(I):NEXT:CLOSE4
:REM*249
130 END :REM*3
—JOHN E. MILLER, HAVERHILL, OH
```

\$4CE HI-TECH LOOK ON A LO-TECH BUDGET

If you've priced monitor and printer stands recently, you know they're outrageously expensive. So do what I did—make your own! Buy a grid chair or two (they're about \$5 each) at your local department store and shorten the legs with a hacksaw to a height of four or five inches, so a computer and peripherals will fit under the seat. Place the four rubber feet from the feet of the chair onto the legs of the chair. Saw off the back of the chair, but leave the armrests on to hold the monitor or printer in place.

—BEAU BEAUHARNOIS, PLATTSBURG, NY

\$4CF THE DELETER

If you need to delete blocks of lines from a C-64 Basic program, append The Deleter to it to do the job for you.

In the lines beginning at 63000 in the listing below, FL is the first line number of the block you want to delete, and LL is the last line. As you can see, FL and LL have the value of 10 and 40, respectively, which are the first four lines in the listing. As a demonstration, if you run this program as listed, it will delete those lines. When you're ready to run The Deleter, enter RUN 63000 to delete lines.

(Note: If you don't have a program-append utility, you can just list this program to the screen and load in the program you want to append. Then position the cursor over each line of The Deleter from lines 63000 through 63060, and press return. You'll find The Deleter appended to the end of your program.)

```
0 REM THE DELETER - ROLF MILLER :REM*56
10 REM :REM*153
20 REM :REM*163
30 REM :REM*173
40 REM :REM*183
63000 REM ENTER 'RUN 63000' TO DELETE LINE
S :REM*78
63010 FL=10:GOTO 63040:REM MAKE FL = THE F
IRST LINE TO DELETE :REM*123
63020 LL=40: REM MAKE LL = THE LAST LINE T
O DELETE :REM*99
63030 FL=PEEK(820)+PEEK(821)*256:IF FL>LL
THEN END :REM*225
63040 PRINTCHR$(147):POKE 646,PEEK(53281):
POKE 198,3:FORX= 0 TO 2:POKE 631+X,1
3 :REM*157
63050 PRINTFL:NEXT:FL=FL+1:H%=FL/256:L%=FL
-H%*256 :REM*60
63060 POKE 820,L%:POKE 821,H%:PRINT" (COMD
7) RUN 63020"CHR$(19):END :REM*229
```

—ROLF MILLER, VENTURA, CA

\$4DO BYTE CALCULATOR

Programmers who work with bit values to form bytes, such as when editing sprites, usually use a calculator to figure bit combinations. Byte Calculator performs the calculations for you. When the program asks you which bits are on, enter

the bit numbers in any order. It will then display the bits you input followed by the value of the byte created by that set of bits.

```
0 REM BYTE CALCULATOR - SISTER ANNE STREML
AU :REM*234
10 INPUT"WHICH BITS ARE ON";BO$ :REM*74
20 BY=0:FORX=1 TO LEN(BO$) :REM*150
30 AS=ASC(MID$(BO$,X,1)) :REM*209
40 IF AS<48 OR AS>55 THEN PRINT"INVALID BI
T #, TRY AGAIN":GOTO 10 :REM*91
50 EX=VAL(MID$(BO$,X,1)) :REM*50
60 BY=BY+2{UP ARROW}EX :REM*164
70 NEXT :REM*200
79 PRINT"BITS INPUT =" ;BO$ :REM*167
80 PRINT"VALUE OF BYTE =" ;BY :REM*195
90 GOTO10 :REM*212
```

—SISTER ANNE STREMLAU, MAUSTON, WI

\$4D1 BRIGHTER BORDERS 64

Enhance your screen border display with Brighter Borders, an interrupt-driven program that uses the raster register to give the border a rainbow of colors. Unlike programs of similar design, running a Basic program will not affect these bars of color, making Brighter Borders easy to incorporate into your own programs.

Use POKE 867,251 to scroll the bars downward, and POKE 840,33 to transfer the bars to the inner screen.

```
0 REM BRIGHT BORDERS - JEFF A. MARTIN :REM*42
10 FORI= 828 TO 953:READA:POKEI,A:B=B+A:NE
XT :REM*220
20 IFB<>13466THENPRINT"ERROR IN DATA":END
:REM*144
30 SYS874 :REM*163
40 DATA 173,25,208,141,25,208,166,250,189,
154,3,141,32,208,198,250,202 :REM*237
50 DATA 165,251,24,125,154,3,141,18,208,19
8,250,224,0,240,6,104,168,104 :REM*24
60 DATA 170,104,64,230,252,32,145,3,108,15
2,3,173,20,3,141,152,3,173,21 :REM*230
70 DATA 3,141,153,3,120,169,60,141,20,3,16
9,3,141,21,3,88,169,127,141 :REM*2
80 DATA 13,220,169,1,141,26,208,133,251,16
9,27,141,17,208,169,31,133 :REM*213
90 DATA 250,96,49,234,26,13,10,5,250,3,234
,14,218,6,202,4,186,9,170,2 :REM*195
100 DATA 154,8,138,10,122,7,106,1,90,15,74
,12,58,11,42,0 :REM*138
```

—JEFF A. MARTIN, ROSEVILLE, CA ■

Magic is a forum for RUN readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published. A payment of \$50 and a Magic Contributor T-shirt are awarded for the Trick of the Month. For a copy of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope.

SAY IT WITH A BANNER!

RUN

THE COMMODORE 64/128 USER'S GUIDE

October 1988

An IDGC/I
Publication

U.S.A. \$2.95

CANADA \$3.95

U.K. £2.00

Powerful Printers

Which One for You?

**MUSIC EDITOR
Tunes Up
Your C-128!**

**MONKEY SEE
Fun for All Ages!**

EDUCATION EXTRA:

- ▶ Software Reviews
- ▶ Instant Test Maker
- ▶ Teacher's Pet



MAGIC

Use a "fizzle" effect rivaling those found on commercial programs; make DIP switches easily accessible; or test your skill in a C-64 game.

Compiled by TIM WALSH

\$4D2 SCIENTIFIC NOTATION ELIMINATION

Get rid of scientific notation when performing multiplication on large numbers by using my program, Scientific Notation Elimination. Without resorting to scientific notation, it produces an answer after multiplying integers up to nine digits long.

```
0 REM MULTIPLIES WITHOUT NOTATION - WILLIAM
  M B BAILEY :REM*211
10 PRINT CHR$(147)"CANCELS SCIENTIFIC NOTATION" :REM*65
20 DIM C(19),C$(19):M=0:N=0 :REM*99
30 INPUT"ENTER 1ST NUMBER";A$ :REM*150
40 INPUT"ENTER 2ND NUMBER";B$:LA=LEN(A$):LB=LEN(B$) :REM*205
50 IF LEN(A$)>9 OR LEN(B$)>9 THEN 240 :REM*152
```

```
60 VA=VAL(A$):VB=VAL(B$):P=19-(LA+LB) :REM*116
70 IF VA<>INT(VA)OR VB<>INT(VB) THEN 240 :REM*160
80 FOR I=1 TO LA:A(I)=VAL(MID$(A$,I,1)):NEXT :REM*26
90 FOR I=1 TO LB:B(I)=VAL(MID$(B$,I,1)):NEXT :REM*206
100 FOR I=18 TO P STEP-1:Q=I :REM*211
110 FOR J=LA TO 1 STEP-1 :REM*106
120 C(Q)=C(Q)+A(LA-N)*B(LB-M):Q=(Q-1) :REM*6
130 N=N+1:NEXT :REM*174
140 M=M+1:N=0:IF M<=LB THEN NEXT :REM*182
150 FOR I=18 TO P STEP-1:C(I)=C(I)+R :REM*177
160 R=INT(C(I)/10):C(I)=C(I)-10*INT(C(I)/10) :REM*116
```

TRICK OF THE MONTH

\$4D3 CHARACTER FADE/RESTORE 64

Many commercial games use a technique, called "fizzle," that makes screen images fade out and fade in. Until now, using this technique in your own programs was well beyond the reach of everyone but highly skilled programmers.

Now, using the C-64's character set and the Character Fader 64 program, anyone can do it. Type in the program, using RUN's Checksum, and save it. Run the program and treat yourself to a performance that rivals those found in most commercial programs.

When you first enter the SYS 49152 command, the screen fades, and entering it the second time returns the screen. To change the speed of fade out/fade in, enter POKE 49240, followed by a comma and a number from 0 (fastest) to 255 (slowest). Adding this technique to your own programs will create some stunning displays.

```
0 REM 64 LETTER FADER - JEFF MARTIN:REM*35
10 FOR I=49152 TO 49420:READ:POKE I,D:C=C+D:NEXT I :REM*59
20 IF C<>31597 THEN PRINT"ERROR IN DATA...":END :REM*168
30 FOR T=1 TO 20:PRINT"LETTER FADER IS ACTIVATED":SYS 49152:NEXT T :REM*219
40 DATA 173,24,208,41,8,208,62,32,27,192,208,40,160,0,132,250,132,252 :REM*212
50 DATA 169,208,133,253,169,48,133,251,96,32,12,192,133,52,133,56,173 :REM*60
60 DATA 24,208,41,240,9,12,141,24,208,140,
```

```
14,220,169,51,133,1,96,177 :REM*155
70 DATA 252,145,250,200,208,249,230,251,230,253,165,253,201,224,208,239 :REM*234
80 DATA 32,44,192,32,12,192,160,0,169,192,133,255,238,11,193,173,11,193 :REM*237
90 DATA 201,1,208,246,169,255,141,11,193,166,255,169,248,133,254,173,12 :REM*226
100 DATA 193,240,5,32,171,192,80,3,32,187,192,232,200,240,6,230,254,208 :REM*23
110 DATA 235,240,212,230,251,230,253,165,253,201,210,208,240,32,12,192 :REM*228
120 DATA 24,165,255,105,8,133,255,208,190,173,12,193,240,5,142,12,193 :REM*196
130 DATA 208,4,232,142,12,193,169,55,133,169,1,141,14,220,96,177,252 :REM*107
140 DATA 61,11,192,141,13,193,177,250,13,13,193,145,250,96,189,11,192,73 :REM*37
150 DATA 255,141,13,193,177,250,45,13,193,145,250,96,16,4,4,1,1,64,128 :REM*13
160 DATA 32,64,64,64,2,4,8,64,1,128,32,128,16,128,16,8,128,4,128,32,64 :REM*185
170 DATA 32,128,1,2,8,8,8,128,64,32,2,8,32,1,1,32,16,1,4,16,1,16,2,8,2,2 :REM*181
180 DATA 32,4,2,2,16,4,8,4,16,64,255,0 :REM*180
```

—JEFF A. MARTIN, ROSEVILLE, CA

MAGIC

```

Ø) :REM*33
17Ø NEXT :REM*45
18Ø FOR I=PTO18:C$(I)=STR$(C(I)):NEXT :REM*63
:REM*193
19Ø IF C$(P)=" Ø"THEN P=P+1 :REM*193
20Ø FOR I=P TO 18:T$=T$+RIGHT$(C$(I),1):NE
XT :REM*77
21Ø PRINT:PRINT"{3 SPACES}"T$:PRINT :REM*157
22Ø PRINT" PRESS {LEFT ARROW} TO REPEAT :REM*56
23Ø GET A$:IF A$<>"{LEFT ARROW}"THEN23Ø :REM*176
24Ø CLR:GOTO1Ø :REM*74
B18Ø :REM*43
13Ø FORD= 1ØØ TO 1STEP-2Ø:PRINT"{SHFT CLR}
NEED ","TO RECEIVE" :REM*1Ø6
14Ø PRINT"-----","-----" :REM*28
15Ø FORC= D TO D-2Ø STEP-1:A$=(A+(LP*C/1ØØ
)+.5):PRINTC,A$; :REM*135
16Ø IF AF%=ØTHEN IFA%=>CTHENAF%=1:PRINT"CU
RRENT AVERAGE"; :REM*171
17Ø PRINT:NEXT:GOSUB18Ø:NEXT:AF%=Ø:GOTO13Ø :REM*138
18Ø PRINT"{CRSR DN}PRESS A KEY TO CONTINUE
{CRSR UP}" :REM*234
19Ø GETA$:IFA$=""THEN 19Ø :REM*157
20Ø RETURN :REM*87

```

—WILLIAM B. BAILEY, SACRAMENTO, CA

—ANDREW SENFT, AUBURN, NY

\$4D4 THE FINAL GRADE

In keeping with the educational theme of this issue, here's a useful 64/128 program for students from elementary to undergraduate school to help them determine their final grades. Type in Last Grade 64/128 and save it to disk, and run it in either 64 or 128 mode. It determines your final grade based on the results of all your test scores. It also tells you the score you need on your final exam in order to achieve a desired final grade.

If your teacher or instructor tells you that all tests have the same weight in determining the final grade, enter 100 at the first prompt. Then enter the scores from all previous tests in that class. Make sure that the missing grade percentage is configured last. After entering all the percentages, the program displays a list of potential last-grade percentages corresponding to the final average. Also, note that variables that can affect your final grade, such as attendance and class participation, are not reflected in this program.

```

Ø REM C-128/C-64 LAST GRADE - ANDREW SENFT :REM*159
1Ø POKE 5328Ø,Ø:POKE 53281,Ø:PRINTCHR$(147
)"LAST GRADE :REM*222
2Ø PRINT"{CRSR DN}PRESS RETURN WHEN FINISH
ED" :REM*134
3Ø P%=Ø:PRINT"{CRSR DN}GRADE SECTION PERCE
NTAGE FROM";1ØØ-TP%";"{CRSR LF}%" :INPUT
P% :REM*151
4Ø IFP%+TP%>1ØØTHENPRINT"{CRSR DN}TOTAL EX
CEEDS 1ØØ% BY";(TP%+P%)-1ØØ:GOTO3Ø :REM*238
5Ø TP%=TP%+P%:IFP%=ØTHENLP=1ØØ-TP%:GOTO 12
Ø :REM*15
6Ø GC%=Ø:GA%=Ø :REM*194
7Ø G$="":INPUT"GRADE IN %";G$:IFG$<>" "THEN
GA%=GA%+VAL(G$):GC%=GC%+1:GOTO7Ø :REM*1ØØ
8Ø IF GC%=ØTHEN GC%=1 :REM*243
9Ø PRINT"AVERAGE= ";GA%/GC% :REM*13Ø
1ØØ IFTP%<1ØØTHENA=A+(GA%/GC%)*P%/1ØØ:GOTO
3Ø :REM*23Ø
11Ø A=A+(GA%/(GC%+1))*P%/1ØØ:LP=P%/(GC%+1)
:REM*23
12Ø PRINT"{2 CRSR DNs}{CRSR LF}";LP;"{CRSR
LF}% LEFT TO COMPUTE LAST GRADE":GOSU

```

\$4D5 SLOWING THE FREQUENCY

We've received letters from *RUN* readers such as Juan Braghini of Concordia, Argentina, and Giorgio Grassi of Parma, Italy, asking for a way to change the C-64 and C-128 internal clocks to operate on the South American and European 50 Hz electrical current. In response, I've written utilities for both the C-64 and the C-128 that slow the CIA #1 and CIA #2 clocks to 50 Hz. This permits Commodore owners in these countries to use programs that utilize internal clocks, such as Notepad 64/128, Time Keeper 64/128 and, of course, Tick Tock 128.

Before using any Commodore program on overseas electrical currents, run the appropriate version of this utility. Anyone taking his or her Commodore abroad would also be wise to take along these two clock-conversion programs.

```

Ø REM C-64 5Ø HZ WEDGE - BOB KODADEK :REM*133
1Ø SA=3Ø4:VEC=768:REM 'SA' IS RELOCATABLE :REM*98
2Ø FORI=Ø TO 1Ø:READBY:POKE SA+I,BY:NEXT :REM*229
3Ø POKE VEC,SA-INT(SA/256)*256 :REM*132
4Ø POKE VEC+1,INT(SA/256) :REM*12Ø
5Ø DATA 173,14,221,9,128,141,14,221,76,139
,227 :REM*58
Ø REM C-128 5Ø HZ WEDGE - BOB KODADEK :REM*52
1Ø SA=2Ø48:VC=768 :REM*247
2Ø FORI=Ø TO 18:READB$:POKE SA+I,DEC(B$):N
EXT :REM*187
3Ø POKE VEC,SA-INT(SA/256)*256 :REM*132
4Ø POKE VEC+1,INT(SA/256) :REM*12Ø
5Ø DATA AD,Ø,FF,29,FE,8D,Ø,FF,AD,E,DD,9,8Ø
,8D,E,DD,4C,3F,4D :REM*14Ø

```

—BOB KODADEK, ASTON, PA

\$4D6 LENGTHY DIP SWITCHES

I've placed this DIP tip on a local BBS and have gotten many thank-yous in return. I hope *RUN* readers will find it equally helpful. To make the DIP switches on the rear of

Continued on p. 88.

From p. 10.

1571 and 1581 drives easily accessible, take a spray extension tube (found on cans of lubricants and cleaners) and cut a piece off about 1/2 to 3/4 of an inch long.

Slip the tubing securely over the left DIP switch. Now you simply lift the piece of tubing up for setting the drive to device 8, or press it down to configure the drive as device 9. And you'll never have to disconnect cables, turn the drive around and find a pen just to change device numbers. Plus, since the tubing is firm but flexible, you'll never damage the DIP switches from excessive pressure.

—MARTIN ZINAICH, PLANT CITY, FL

\$4D7 RESCUE RUN 64

Accurately dropping supply packages onto a target from a fast-moving airplane requires quick reactions and a steady hand. This program, Rescue Run 64, has an airplane flying across the screen at randomly chosen altitudes. On each pass, you get one chance to release a package on a ground-based target by pressing any key. Hitting the target wins you 25 points; a bull's-eye is worth 50. Bombs away!

```

0 REM 64 RESCUE RUN - JOE CHARNETSKI
                                :REM*102
10 R=54272:FORI=R TO R+23:POKEI,0:NEXT:POK
   EI,15:POKE R+5,5:POKE53280,2 :REM*198
20 POKE53281,0:N=INT(RND(.)*12+1):TC=56267
   +N:TL=1995+N:BT=TL-38:Y=N+3:POKE646,N
                                :REM*219
30 PRINT"{SHFT CLR}{CTRL 9}"SPC(17)RIGHT$(
   "00000"+MID$(STR$(S),2),5):POKE R+1,23:
   POKE R+4,20 :REM*185
40 IFS<ATHENPOKE R+4,23:S=S+5:GOTO30
                                :REM*14
50 FORJ=1TO3:POKETC+J,N+2+(JAND1):POKETL+J
   ,160:NEXT:POKE646,N+1:POKE198,0:REM*214
60 PRINT"{HOME}";:FORI=1TOY:PRINT:NEXT:PRI
   NTTAB(X)" {CRSR DN} {CRSR LF} {CRSR UP}{
   CTRL 9}{COMD *} {CRSR DN} {CRSR LF} {SHFT
   *} {COMD *}":IFK$=""THENGETK$:REM*139
70 IFK$<>""THENIFD<6THENC=X+3:D=D+1
                                :REM*214
80 IFD>1THENPOKE B,32:V=V+1 :REM*13
90 IFCTHENB=C+1024+(V+Y+2)*40:POKEB,98
                                :REM*81
100 IFB>BT-2ANDB<BT+2THENA=S+50+(B<>BT)*25
   :K$="":B=0:C=0:D=0:V=0:X=0:GOTO20
                                :REM*235
110 X=X+1:IFX< 36 AND B <1984 GOTO 60
                                :REM*131
120 PRINT"{HOME}{2 CRSR DNs}{CTRL 2}"TAB(1
   3)"TRY AGAIN (Y/N)?" :REM*183
130 GETA$:IFA$="Y"THENRUN :REM*152
140 IFA$="N"THEN PRINT"{SHFT CLR}":POKE R+
   24,0:END :REM*37
150 GOTO130 :REM*216

```

—JOSEPH CHARNETSKI, DALLAS, PA

\$4D8 CHARACTERS FROM THE CENTER

Having messages "grow" out from the center of the monitor screen is an eye-catching trick. Letter Extractor works in

both 64 and 128 modes. Just assign a message to A\$, and you can use it repeatedly in one program with a GOSUB 50000 command.

```

0 REM 64/128 LETTER EXTRACTOR - BRIAN JAND
   ULA :REM*242
10 PRINTCHR$(147):PRINT"{CTRL 2}" :REM*63
20 A$="PRESS A KEY FOR ANOTHER MESSAGE!":G
   OSUB 50000 :REM*77
25 GET A$:IF A$=""THEN 25 :REM*9
30 A$="{6 SPACES}HERE'S THE SECOND MESSAGE
   !{6 SPACES}":GOSUB 50000 :REM*22
35 REM REDEFINE A$ AS NECESSARY :REM*166
40 PRINT:END :REM*183
50000 A=LEN(A$):IFA/2<>INT(A/2)THEN A=A+
   "{CTRL 9}" :REM*39
50010 FORI=1 TO A/2:PRINT"{HOME}"TAB(22-I)
   ;LEFT$(A$,I)RIGHT$(A$,I):PRINT"{2 CR
   SR DNs}" :REM*160
50015 FORH=1TO40:NEXT:NEXT:RETURN :REM*213

```

—BRIAN K. JANDULA, ANTIOCH, IL

\$4D9 C-64 AUTUMN LETTERS ARE A-FALLIN'

Alpha Autumn 64 makes autumn leaves in all their colors fall down your screen in the shape of letters. The value of A gives the letters an unusual twirling effect.

```

0 REM IN TIME FOR AUTUMN - BILL LAWRENCE
                                :REM*167
10 PRINTCHR$(147):POKE 53280,0:POKE53281,0
   :A=66:B=32:R1=1031:R2=1471 :REM*197
20 FORL=1TO26:C=INT(RND(0)*4+7) :REM*66
30 FORI=R1 TO R2STEP40:POKEI,L:POKE54272+I
   ,C:FORJ=1TO50:NEXT :REM*160
40 POKEI,A:FORJ=1TO50:NEXT:POKEI,B:NEXT
                                :REM*98
50 POKER2,L:POKE54272+R2,C:R1=R1+1:R2=R2+1
   :NEXT:FORJ=1TO1500:NEXT :REM*8

```

—BILL LAWRENCE, WINNEPEG, MANITOBA, CANADA

\$4DA DON'T FORGET THE 1902A!

Color Cornucopia (RUN, July 1988) showed C-128 owners how to squeeze hundreds of colors out of their 80-column video monitors. Unfortunately, the program has practically no effect on the Commodore 1902A's 80-column screen.

But don't despair. My program uses the C-128's 40-Column mode to squeeze some colors out of the 1902A in Multicolor mode. By drawing series of closely knit, multicolored lines, you can get some unusual colors. For reference, the standard 16 colors are drawn at the top of the screen.

Now, if I could just find a use for these. . .

```

0 REM EXTRA C-128 40-COLUMN COLORS - ROBER
   T MORTON :REM*230
10 GRAPHIC 3,1 :REM*148
20 COLOR 0,1:COLOR4,1 :REM*185
30 T=T+1:IFT=16GOTO1000:COLOR1,T:COLOR2,T+1
   :REM*174
40 C=0:FORX=0TO160STEP10:C=C+1:IFC<16THEN
   COLOR3,C :REM*168

```


MAGIC

```

50 BOX 3,X,0,X+10,20,0,1 :REM*75
60 NEXT :REM*190
70 FORX=0 TO 160STEP2:DRAW1,X,20 TO X,199 :REM*205
80 DRAW 2,X+1,20 TOX+1,199:NEXT:SCNCLR :REM*170
90 GOTO 30 :REM*216
100 END :REM*228

```

—ROBERT MORTON, DENTON, MD

\$4DB C-128/1571 GO64 SAFEGUARD

After using the C-128's GO64 command with a 1571 drive, the drive is still in 1571 mode, even though the computer is in 64 mode. Therefore, it's a good idea to issue the following command after the GO64 command to set things straight:

```
OPEN 15,8,15,"UJ":CLOSE 15
```

Now you can safely load most copy-protected software and programs such as your QuantumLink terminal package.

—ROBERT V. TAYLOR, LITTLE ROCK, AR

\$4DC UNRESTRICTED FRACTION CONVERSION

Here's a 64- and 128-mode program that converts any decimal number into a common fraction in lowest terms. The resulting fraction is the precise equivalent in the case of a terminating decimal, and is very accurate, although, of course, not exact, when the decimal number is periodic or irrational. It is more powerful than Magic Trick \$3FD (RUN, July 1987), which converts only terminating numbers.

Just type it in, using RUN's Checksum, and then run it in either 64 or 128 mode. The accuracy in non-terminating cases can be enhanced by substituting other values for E in line 10. Programmers will undoubtedly find uses for this routine in any programs that display decimal results.

```

0 REM C-128/C-64 FRACTION CONVERSION - DAN
ILO R. VELIS :REM*21
10 E=1E-8:J=2:DIME(16),R(16):INPUT" {CRSR D
N)NUMBER";N$:T=LEN(N$) :REM*160
20 I=I+1:C$=MID$(N$,I,1):IFC$<>". "ANDI<TTH
ENB$=B$+C$:GOTO20 :REM*46
30 T=T-I:T=VAL("."+RIGHT$(N$,T)):U=T :REM*101
40 IFT=0THENB$=B$+C$:GOTO100 :REM*107
50 T=1/T:E(J)=INT(T):T=T-E(J):R(J)=E(J):R(
J+1)=1 :REM*161
60 FORI=1TOJ-2 :REM*89
70 R(J-I)=E(J-I)*R(J-I+1)+R(J-I+2):NEXT :REM*174
80 IFABS(R(3)/R(2)-U)>EANDJ<15THENJ=J+1:GO
TO50 :REM*49
90 A$=STR$(R(2)):B$=B$+STR$(R(3))+"/"+RIGH
T$(A$,LEN(A$)-1) :REM*242
100 PRINT"THE FRACTION IS "B$:RUN :REM*21

```

—DANILO R. VELIS, BUENOS AIRES, ARGENTINA

\$4DD LINE-BY-LINE CLEARING ON THE C-64

Anyone who writes programs on the C-64 has probably at some time needed to erase part of the screen, while leaving the remainder intact. There are several ways to do this, such

as holding down the space bar or the delete key.

C-64 Line Eraser gives you a much faster and easier way. Just type in this program, save it, then run it. After it's activated, you won't even know it's present until you want to delete a line. To do so, position the cursor on the line, press the F1 key and—zap!—no more line. The program from which you deleted the line is unaffected, and the line is still in the program and in memory, in case you decide you want it back.

0 REM 64 LINE ERASER - MARC TEMANSON

```

:REM*254
10 FORX=49152 TO 49193:READS:POKEX,S:NEXT:
SYS49152:NEW :REM*6
20 DATA 120,169,192,141,21,3,169,13,141,20
,3,88,96,165,207,201,0,240 :REM*248
30 DATA 3,76,49,234,165,203,201,4,240,3,76
,49,234,166,214,142,13,3 :REM*189
40 DATA 32,255,233,76,49,234 :REM*224

```

—MARC TEMANSON, PEABODY, KS

\$4DE GETTING OUT OF C-128 WINDOWS

Although long-time C-128 users eventually learn how to escape a window on the C-128's 40- and 80-Column modes without pressing run-stop/restore, most new C-128 users don't yet know how. Pressing run-stop/restore will exit the window, but it will also clear the screen and possibly disable any interrupt-driven utilities you may have active.

For those wondering how to properly exit a window, just press the home key twice in Direct mode, or, in a program, enter PRINT"{2 HOMES}", which will accomplish the same thing.

—RICK SPRAGUE, GLADWIN, MI

\$4DF MORE SAFE WINDOW EXITS

Pressing the home key twice to exit a window causes the C-128 to reset all line links. Once they're reset, lines that wrap around to form two or more lines are interpreted as individual lines. Therefore, never edit program lines already displayed on the screen after exiting a window in this manner. Rather, clear the screen and display a fresh listing.

—DOUGLAS JOHNSON, LARGO, FL

\$4EO ANOTHER USE FOR REM STATEMENTS

When debugging or testing a new program, you'll find that deleting a line or group of lines comes in handy in many situations. However, instead of deleting the line(s), try inserting a REM statement at the beginning thereof. Use the shifted insert-delete key to insert four spaces at the beginning of the line between the line number and the first statement. Here's an example:

```
10 POKE 53280,0:POKE 53281,0:PRINT CHR$(147)
```

and after inserting the REM:

```
10 REM POKE 53280,0:POKE 53281,0:PRINT CHR$(147)
```

Later, after testing the program, you'll probably want to restore the lines to their original syntax, so list them and remove the REM statement. You'll soon find that this process is one of the handiest uses for the REM statement.

—TONY PATTON, LOUISVILLE, KY ▶

MAGIC

\$4E1 FANCY CHARACTER PRINTING

If you're writing a program and need to print text to the screen at some point, don't use a standard Print statement. Instead, spice up your program with my fancy print routine, Comet-Like Cursor. It earned its name because it makes the cursor move across the screen while leaving a trail of user-defined letters contained in the variable A\$.

```
Ø REM COMET-LIKE CHARACTERS - HELEN ROTH
                                :REM*252
1Ø A$="THIS CAN BE ANY MESSAGE DESIRED"
                                :REM*185
2Ø FOR I=1 TO LEN(A$)           :REM*212
3Ø PRINTMID$(A$,I,1){CTRL 9} {CTRL Ø}{CRS
```

```
R LF)";
4Ø FOR J=1 TO 5Ø:NEXT:NEXT:PRINT" ":REM*7Ø
```

—HELEN ROTH, LOS ANGELES, CA ■

If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month.

MEGA-MAGIC

*Use your joystick as you would a mouse
for pointing and selecting.*

JOYSTICK MOUSE EMULATOR

With a joystick in port 2, Joystick Mouse Emulator moves a pointer about the screen much as does a mouse input device. Type in Listing 1 (Joystick Pointer) and Listing 2 (Mouse Emulation Demonstration), using RUN's Checksum program to trap your mistakes, and save them to disk.

Plug a joystick into port 2 after you turn off your computer, power up again, and load and run Listing 1, then load and run Listing 2. Listing 2 lists some typical commands on the screen, along with the pointer, calls the machine language routine and waits for the joystick to move the pointer. A formula computes the pointer's screen location (1024-2023 in default) when you press the fire-button.

The pointer moves in the direction you press the joystick. When you move the tip of the pointer over a desired instruction, press the fire-button to get a message identifying your selection. For instance, if you move the pointer to the Print option and press the fire-button, the screen displays the message "You called for Print".

The data for the sprite shape begins at the eighth data element in Listing 1 on line 220. Change this data to create other shapes. Data items 13 and 15 in line 200 change the

speed at which the pointer moves; I used values that make it move at a reasonable speed.

You can use Joystick Pointer as a machine language subroutine in your own applications programs. Just use a GOSUB command early in your own program to install the ML. Your programs will have to contain a series of IF-Then statements, such as the demo program uses, to determine the action taken when you make a selection.

Of course, in using the joystick routine in your own applications, you must map out the format of your own on-screen instructions, commands, options, and so on. The formula in line 70 of the demo program returns the number of the screen cell that the pointer occupied when you pressed the fire-button, by reading the sprite horizontal and vertical registers for the pixel number of the line and column of the sprite. For instance, for a pointer in the upper-left corner of the screen, P = 1024, the first screen location in default memory.

To switch screen locations, adjust the formula by changing 1024 to the number of the first byte of screen memory that your program uses; the joystick routine still works.

—KENNY LAWSON, INDIANAPOLIS, IN ■

Listing 1. Joystick Pointer program.

```
1Ø REM JOYSTICK POINTER - KENNY LAWSON
                                :REM*2Ø4
2Ø FORX=68ØTO695:READA:POKEX,A:CT=CT+A:NEXT
                                :REM*123
3Ø FORX=4Ø96ØTO41311:READA:POKEX,A:CT=CT+A
                                :NEXT
                                :REM*4Ø
4Ø IFCT<>37849THENPRINT"{SHFT CLR}ERROR IN
  DATA STATEMENTS!":END
                                :REM*62
5Ø PRINTCHR$(147)"RUN LISTING 2 TO SEE MOU
  SE EMULATOR."
                                :REM*184
6Ø DATA 165,1,41,254,133,1,32,Ø,16Ø,165,1,
  9,1,133,1,96,162,Ø,189,32,161
                                :REM*51
7Ø DATA 157,192,2,232,224,64,2Ø8,245,165,1
  7Ø,141,Ø,17Ø,169,11,141,248,7
                                :REM*181
8Ø DATA 169,1,141,21,2Ø8,169,Ø,141,16,2Ø8,
  141,27,2Ø8,141,31,2Ø8,141,39
                                :REM*97
9Ø DATA 2Ø8,169,24,141,Ø,2Ø8,169,5Ø,141,1,
  2Ø8,173,Ø,22Ø,133,17Ø,41,16
                                :REM*1Ø2
1ØØ DATA 2Ø8,6,173,Ø,17Ø,76,19,161,165,17Ø
  ,41,15,133,17Ø,169,15,56,229
                                :REM*9Ø
```

RUN it right: C-64, joystick

★ NEW, IMPROVED GEOS IS HERE!

RUN

THE **COMMODORE** 64/128 USER'S GUIDE

November 1988
An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

Commodore

NOW PLAYING ★ GREAT
ENTERTAINMENT SOFTWARE

See page 36

**PRESIDENTIAL
TRIVIA—
How Much
Do You Know?**

- ★ Panel Maker
- ★ C-64 Metric Converter
- ★ Savings Forecaster 128
- ★ Mystery Match



MAGIC

Get greater control over your C-64 with four new functions;
enter an exciting motocross race.

Compiled by TIM WALSH

\$4E2 SIMPLE FILE PROTECTION

Here's a way to save programs to disk in a manner that prevents unauthorized access. Save the program as follows:
SAVE"FILENAME,S",8

The program will appear on the directory as a sequential file if a ,S is added to the filename. Loading this bogus sequential file is a matter of simply entering:

LOAD"FILENAME,S",8

This process also creates a bogus user file if a ,U is used instead.

—JOHN H. SCHICK, NORWALK, OH

\$4E3 C-64 MOTOCROSS

Racing a motocross motorcycle requires courage, skill and quick reactions. While courage is not necessary for playing C-64 Motocross, the skill and quick reactions are. By pressing the C (left) and M (right) keys, you are scored on your ability to guide a motorcycle between markers on a narrow, unpredictable, computer-generated race course.

Motocrossers, start your computers!

Ø REM C-64 MOTOCROSS - JOSEPH R. CHARNETSK
I :REM*114

```
1Ø V=53248:M=54296:W=V+31:LM=22Ø:LL=132:MC
=2Ø3:T=8:L=2Ø:R=36:C=16:Z=22:P$="{HOME}
{2 CRSR DNs}" :REM*94
2Ø FORJ=832TO894:READD:POKEJ,D:NEXT:POKEW+
1,Ø:POKEW+2,Ø:POKE2Ø4Ø,13:POKEV+1,145
:REM*145
3Ø PRINT"{SHFT CLR}{CTRL 8}{CTRL 9}MOTOCRO
SS":POKEW+T,RND(Ø)*6+1:POKE646,PEEK(W+T
)+3:S=-9:X=172 :REM*137
4Ø POKEV,X:POKEV+21,1:F=PEEK(W) :REM*23Ø
5Ø PRINTP$SPC(39)CHR$(148)" "SPC(C)"{SHFT
W}{6 SPACES}{SHFT W}":POKELM,LL:S=S+1:I
FS<.GOTO5Ø :REM*48
6Ø PRINTP$S:G=PEEK(MC):POKEW,T :REM*27
7Ø X=X+T*((G=L)-(G=R)):POKEV,X:IFC<T OR C=
INT(RND(.)*T+C)THEN N=1-N :REM*69
8Ø C=C-(N=.)+(N=1):IF C>Z THEN C=Z:N=1
:REM*224
9Ø POKEW,.:ON-(PEEK(W)=.)GOTO5Ø:FORE=1 TO
1Ø:POKEV+39,E:GETB$:NEXT:POKEV+21,Ø
:REM*99
1ØØ PRINTCHR$(147)"{CTRL 8}YOU CRASHED!"P$
"SCORE="S:INPUT"{CRSR DN}TRY AGAIN (Y
/N)":A$ :REM*47
11Ø IF A$="Y" THEN RUN :REM*125 ▶
```

TRICK OF THE MONTH

\$4E4 C-64 RUN CONTROL

64 RUN Control is probably the shortest but most useful interrupt-driven program that C-64 users can add to their collection of programming utilities. Type in the listing with RUN's Checksum, then save it. When you run the program, you're greeted by a screen that lists four new functions assigned to keys F1, F3, F5 and F7.

Pressing F1 stops any function the C-64 is performing, such as executing or listing a program to the screen. After activating F1, F3 resumes execution when it is held down; releasing the key again stops execution. Pressing F5 resumes program execution. Finally, F7 slows down computer operation so that you can examine programs more closely.

Pressing run-stop/restore disables 64 RUN Control, but you can re-activate it with SYS 679. The program is low enough in memory to prevent it from interfering with the operation of other programs.

Ø REM 64 RUN CONTROL - RICHARD PENN
:REM*177

```
1Ø FOR U=679 TO 747:READ Q:POKE U,Q:CK=CK+
Q:NEXT :REM*64
2Ø IF CK<> 8389 THENPRINT"ERROR IN DATA":E
ND :REM*14
3Ø PRINTCHR$(147)"F1 - PAUSE COMPUTER"
:REM*175
4Ø PRINT"F3 - CONTINUE IF KEY KEY IS HELD
DOWN" :REM*63
5Ø PRINT"F5 - RESTARTS COMPUTER" :REM*122
6Ø PRINT"F7 - SLOWS DOWN COMPUTER":REM*193
7Ø SYS 679 :REM*219
8Ø DATA 12Ø,169,18Ø,141,2Ø,3,169,2,141,21,
3,88,96,165,197,2Ø1,3,2Ø8 :REM*116
9Ø DATA 1Ø,162,1Ø,16Ø,255,136,2Ø8,253,2Ø2,
2Ø8,248,165,2,2Ø1,1,24Ø,6,165 :REM*199
1ØØ DATA 197,2Ø1,4,2Ø8,13,32,159,255,165,1
97,2Ø1,5,2Ø8,7,169,1,133,2 :REM*79
11Ø DATA 76,49,234,2Ø1,6,2Ø8,236,169,Ø,133
,2,76,49,234,Ø :REM*2Ø8
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

MAGIC

```
120 DATA ,28,,,62,,,62,,,62,,,62,,,62,,,7,2
    55,240,14,28,56,30,62,60,54 :REM*157
130 DATA 62,54,6,28,48,7,255,240,3,255,224
    ,255,128,,255,128,,62,,,62 :REM*43
140 DATA,,62,,,62,,,62,,,28,, :REM*172
```

—JOSEPH CHARNETSKI, DALLAS, PA

\$4E5 80-COLUMN INSERT MODE CURSOR

Some IBM computers use a special half-block cursor to indicate Insert mode. My program, Half-Height Insert Cursor, gives the C-128's 80-Column mode the same cursor. Just run my program, and whenever Insert mode (ESC A) is activated, the cursor becomes half-height.

```
0 REM 80-COL. INSERT MODE ENHANCEMENT - RO
  SS STENERSEN :REM*78
10 FOR I=0 TO 58:READ B:POKE 2816+I,B:NEXT
  :SYS2816:NEW :REM*238
20 DATA 169,11,141,56,3,169,11,141,57,3,96
    ,201,67,240,7,201,65,240,13,76 :REM*141
30 DATA 193,201,169,103,32,42,11,169,67,76
    ,193,201,169,99,32,42,11,169,65:REM*116
40 DATA 76,193,201,141,43,10,162,10,142,0,
    214,44,0,214,16,251,141,1,214 :REM*160
50 DATA 96 :REM*200
```

—ROSS STENERSEN, LAKE MILLS, IA

\$4E6 CLEAR WITHOUT A HOME

C-64 programs and programmers have been without this routine for far too long. Activating it with SYS 49152 clears the screen but retains the cursor's position. Perhaps the greatest potential for this routine will become apparent to programmers who will no longer have to use cursor-down commands after clearing the screen.

```
0 REM 64 SCREEN CLEAR W/O A HOME - BARRY S
  MITH :REM*96
10 SA=49152:FORT= 0 TO 19:READ M:POKE SA+T
  ,M:NEXT :REM*50
20 DATA 162,0,169,32,157,0,4,157,0,5,157,0
    ,6,157,0,7,232,208,241,96 :REM*227
```

—BARRY SMITH, ROANOKE, VA

\$4E7 64 SHIFT KEY DISTINCTION

Most programmers know that location 653 in the C-64's memory can be used to detect when either shift key is pressed, without differentiating between the left and right keys. Recently, while experimenting with the C-64 joystick registers, I developed a long-sought-after routine that does permit programs to distinguish between the left and right shift keys. The code is as follows:

```
POKE 56323,255:X=PEEK(56320):POKE 56323,0
```

If the value of X equals 125, the left shift key is pressed; if the value is 63, the right shift key is pressed. The following program demonstrates this routine.

```
0 REM C-64 LEFT & RIGHT SHIFT KEY DETECTOR
  - RICHARD PENN :REM*146
10 POKE 56323,255:X=PEEK(56320):POKE 56323,
```

```
0:B$="SHIFT KEY{3 SPACES}" :REM*170
20 IF X=125 THEN A$="LEFT " :REM*145
30 IF X=63 THEN A$="RIGHT " :REM*115
40 IF X<> 125 AND X<> 63 THEN GOSUB 60 :REM*47
50 PRINTCHR$(19);A$+B$:GOTO 10 :REM*44
60 PRINTCHR$(147):A$="{HOME}PRESS A ":RETU
  RN :REM*80
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$4E8 CURING TV INTERFERENCE

Anyone who has ever used a television for a video display with their computer knows that interference with other TVs, printers and appliances is a constant problem. Here's the best way to minimize interference: Coil as much of your RF cable as possible into a loop about six inches in diameter, then vary the size of the loop until you have the best image on your screen. Use electrical tape to secure the loop behind your computer. You'll never have to worry about the coil becoming undone and losing the improved reception.

—JIM YEAMAN, CARLTON, ONTARIO, CANADA

\$4E9 NEW C-128 DEFAULT COLORS

Some impromptu committee at Commodore must have had a strange sense of humor when it selected the pea-soup, green/gray color combination as the default colors on the C-128's 40-column screen. But no matter how pretty you make them with Color commands and Pokes, the same green/gray reappears at the press of run-stop/restore.

My program, New C-128 Default Colors, installs the blue/light-blue color combination used by the C-64. I find it much easier on the eyes. Even when you press run-stop/restore, you will still get the new default colors, not Commodore's. To choose your own default colors, change the two 14s (border and text color) and the 6 (screen color) in the Data statements to any desired values.

```
0 REM C64 COLORS IN 128 40-COL. MODE - BO
  COCHRAN :REM*253
10 FOR A=3072 TO 3099:READ D:CK=CK+D:POKE
  A,D:NEXT :REM*141
20 IF CK<>2581 THENPRINT"ERROR IN DATA..."
  :END :REM*187
30 SYS 3072 :REM*139
40 DATA 169,11,141,0,10,169,12,141,1,10,96
    ,169,14,141,32,208,169 :REM*212
50 DATA 6,141,33,208,169,14,133,241,76,3,6
  4 :REM*214
```

—BO COCHRAN, STARKVILLE, MS ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster and more enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. A payment of \$50 and a Magic Contributor T-shirt is awarded for the Trick of the Month.

 **GEOS Contest Winners Announced**

RUN

December 1988

An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

**Readers
Select Their
Favorite
Software,
p. 42**

THE COMMODORE 64/128 USER'S GUIDE

Who's #1?

**A GUIDED TOUR
OF YOUR COMMODORE**

**PROS AND CONS
OF QUANTUMLINK**

Plus:

-  **Crazy Caverns**
-  **Finance 128**
-  **Math Match**
-  **Instant Address Book**



MAGIC

Get in the spirit of the season with some holiday magic; learn Morse code; shake your screens.

Compiled by TIM WALSH

\$4EA WINTER WONDERLAND

Get friends and family into holiday spirits with this upbeat version of Felix Bernard's "Winter Wonderland." It works in both 64 and 128 modes.

```
0 REM WINTER WONDERLAND - JOE CHARNETSKI
                                :REM*203
10 R=54272:FORI=RTOR+23:POKEI,0:NEXT:POKER
   +5,9:POKER+6,12:POKER+24,15 :REM*199
20 FORJ=1TO139:READD,Z:POKER+1,D:POKER+4,3
   3:IF(J=33)OR(J=106)THEN RESTORE:REM*207
```

```
30 FORT=1TOZ*117:NEXT:POKER+4,32:NEXT:POKE
   R+24,0 :REM*178
40 DATA 50,2,50,1,50,6,50,2,50,1,42,2,50,6
   ,50,2,50,1,50,6,50,2,50,1,44,2 :REM*155
50 DATA 50,6,50,2,63,2,63,1,63,2,56,6,56,2
   ,50,2,50,1,50,2,44,6,42,2,42,1 :REM*226
60 DATA 42,2,42,1,37,2,37,1,37,2,37,1,33,6
   ,33,2,33,1,56,2,56,1,37,2,37,1 :REM*89
70 DATA 59,2,59,1,56,2,44,6,33,2,33,1,56,2
   ,56,1,37,2,37,1,59,2,59,1,56,6 :REM*73
80 DATA 44,2,44,1,75,2,75,1,50,2,50,1,79,2
   ,79,1,75,2,59,6,59,2,67,1,75,2 :REM*37
```

TRICK OF THE MONTH

\$4EB MORSE CODE MANIA

Anyone familiar with Morse code can tell you it can be learned quickly through repetition. My 128- and 64-mode program, Morse Code Trainer, repeatedly sounds the dots and dashes of randomly chosen letters to ensure the gradual mastery of the code.

When you run the program, you're prompted to enter a delay length to define how quickly a letter is sounded. You have ten seconds to respond, but you can adjust the response time with the variable T\$.

Once a letter is sounded, press the corresponding letter key. If you want the code repeated, press the minus sign key. Press + to see your score and * to quit the program.

```
0 REM MORSE CODE TRAINER - KEN SLIGHT
                                :REM*18
10 POKE 53281,0:POKE53280,0:PRINT"{SHFT CL
   R}{CTRL 2}"CHR$(14)CHR$(8) :REM*10
20 T$="000010" :REM*48
30 INPUT"DELAY LENGTH";D:IF D<0 THEN 30
                                :REM*193
40 PRINTTAB(10){SHFT CLR}{CTRL 9}MORSE CO
   DE TRAINER{CRSR DN}:"A(1)=20:A(2)=200:S
   =54272 :REM*65
50 DIM CODE(25,3) :REM*218
60 FORT=0 TO 25:FORI=0 TO 3:READCODE(T,I)
   :NEXT:NEXT :REM*15
70 FORK=S TO S+24:POKEK,0:NEXT:PRINT:W%=RN
   D(1)*26 :REM*78
80 TI$="00000000":FORI=0 TO 3:C=CODE(W%,I)
                                :REM*3
90 POKES+5,9:POKES+6,0:POKES+24,15:POKES+1
   ,25:POKES,157:POKES+4,32 :REM*161
100 IF C<>0 THEN POKES +4,33:FORT=0 TO A(C
```

```
) :NEXT :REM*126
110 POKES +4,32:FORT=0TOD:NEXT:NEXT:PRINT:
   PRINT"ENTER LETTER:" :REM*109
120 PRINT"- TO REPEAT, + TO SEE RATING, *
   TO QUIT" :REM*122
130 GETAS:IFTI$<T$ AND A$<>"-" AND A$<>"+"
   AND A$<>"*"AND A$=" THEN 130 :REM*68
140 IF A$=CHR$(65+W%) THEN 200 :REM*134
150 IF A$="-" THEN 80 :REM*157
160 IF A$="+"AND P>0 THEN GOSUB 220:GOTO80
   :REM*141
170 IF A$="*"AND P>0 THEN GOSUB 220:END
   :REM*127
180 IF TI$>T$ OR A$<>CHR$(65+W%) THEN 210
   :REM*136
190 GOTO 130 :REM*1
200 PRINT"{CRSR DN}"CHR$(W%+65)," YOU GOT
   IT, TIME= "TI$:R=R+1:P=P+1:GOTO 70
   :REM*165
210 PRINT"{CRSR DN}INCORRECT ANSWER, LETTE
   R IS "CHR$(65+W%):P=P+1:GOTO 70
   :REM*221
220 PRINT"{CTRL 2}TRIED="P" RIGHT="R"{2 SP
   ACES}%="R/P*100:RETURN :REM*93
230 DATA 0,0,1,2,2,1,1,1,2,1,0,2,1,1,0
   ,0,0,1,1,1,2,1,0,2,2,1,1,1,1,1:REM*246
240 DATA 0,0,1,1,1,2,2,2,0,2,1,2,1,1,1,0
   ,0,2,2,0,0,2,1,0,2,2,2,1,2,2,1:REM*247
250 DATA 2,2,1,2,0,1,2,1,0,1,1,1,0,0,0,2,0
   ,1,1,2,1,1,1,2,0,1,2,2,2,1,1,2 :REM*85
260 DATA 2,1,2,2,2,2,1,1 :REM*83
```

—KEN SLIGHT, JEFFERSON, WI


```
90 DATA 75,1,75,2,75,1,67,2,67,1,75,2,67,1
,59,6 :REM*163
```

—JOSEPH CHARNETSKI, PLAINS, PA

\$4EC SILVER BELLS

"Silver Bells" is a much-enjoyed Christmas song written by Jay Livingston and Ray Evans. Here's a computer version that sounds great on both the C-64 and C-128.

```
0 REM SILVER BELLS - JOE CHARNETSKI :REM*181
10 S=54272:FORR=STOS+23:POKER,0:NEXT:POKES
+5,9:POKES+6,10:POKER,15 :REM*158
20 FORI=1TO148:READA,B:POKES+1,A+42:POKES+
4,21:IFI=74THEN RESTORE :REM*199
30 FORJ=1TO132*(B+2):NEXT:POKES+4,20:NEXT:
POKER,0 :REM*87
40 DATA 25,,14,,8,,,3,25,,14,,8,,,4,42,,33
,,25,3,14,,14,2,14,6,33,,25, :REM*211
50 DATA 21,2,8,,5,,2,8,2,2,,2,,6,25,,14,
,8,,3,25,,14,,8,,,4,42,,33, :REM*41
60 DATA 25,2,14,,14,2,14,6,33,,25,,21,2,8,
,5,,2,8,2,33,2,25,7,,2,8,4 :REM*209
70 DATA 14,,21,,25,5,21,,21,,25,,33,1,25,,
21,,25,,8,5,,2,,8,4,14,,21, :REM*123
80 DATA 25,5,21,,21,,25,,33,1,25,,21,,25,7
:REM*230
```

—JOSEPH CHARNETSKI, PLAINS, PA

\$4ED YULETIDE MAGIC

Light up your home this holiday season with an interesting departure from computerized holiday songs. Yuletide Magic converts your C-64 or C-128 (40-Column mode only) screen to a dazzling, animated greeting card. Use it as a window display along with the traditional window candles.

```
0 REM YULETIDE MAGIC - JOE CHARNETSKI :REM*80
10 POKE53280,0:POKE53281,0:PRINT"{SHIFT CLR
} {COMD 3}" :REM*36
20 DIMM(133):R=54272:X=1163:M(1)=X:I=1 :REM*137
30 FORL=1TO17:J=J+2:X=X+39:IF(L=5)OR(L=12)
THENJ=J-4:X=X+2 :REM*88
40 FORT=0TOJSTEP2:I=I+1:M(I)=T+X:NEXT:NEXT
:REM*45
50 FORC=1 TO 33:S$=S$+" ":NEXT:FORC=1TO23:
PRINTTAB(3)"{CTRL 9}"S$:NEXT :REM*176
60 FORC=1TO21:PRINTTAB(4)"{2 CRSR UPS}{COM
D H}"MID$(S$,5)"{COMD N}":NEXT :REM*254
70 PRINTTAB(5)"{CTRL 8}MERRY{2 CRSR DNs}{5
CRSR LFs}CHRISTMAS" :REM*187
80 FORJ=1TOI:POKER+M(J),13:POKEM(J),81:NEX
T :REM*201
90 FORJ=1TO2:B=X+13+J*40:POKER+B,9:POKEB,1
60:NEXT :REM*65
100 K=RND(.)*7+1:FORI=1TO24:J=RND(.)*I+1:P
OKER+M(J),K:POKEM(J),86 :REM*202
110 POKEM(J),81:NEXT:GETA$:ON-(A$="")GOTO1
00:PRINT"{SHIFT CLR}" :REM*229
```

—JOSEPH CHARNETSKI, PLAINS, PA

\$4EE WORLD'S GREATEST SEQ FILE MERGE

Here's a great Magic trick sure to be appreciated by all who use sequential files—it's the finest sequential file-merging trick ever accidentally discovered. There's no need for you to insert awkward Concat commands or anything else. Just enter the Basic 2.0 Copy command in either 64 or 128 Direct mode:

```
OPEN 15,15,"C0:MERGED FILE=FILENAME1,FILENAME2,
FILENAME3":CLOSE15
```

In the above example, "merged file" is the sequential file produced by merging together "filename1,filename2,filename3". Disk space is virtually the only limitation to the number of files that can be merged into one, and user files can even be mixed in with sequential files without any problems. Numerous opportunities are suddenly made possible by using this command. Now word processor users can easily merge documents without even booting up the word processor!

—MELVIN COLUMN, NEWARK, NJ

\$4EF C-64/C-128 TEXT-FILE READER

A couple of years ago, a pal and I engaged in a friendly contest to see who could write the shortest sequential text-file reader. We can't remember just who won, but I would like to present an enhanced version of the results.

This program, Micro Reader, employs the rarely used M command to read either sequential or program text files. It can direct output to either a printer or the screen. It may be run on either the C-64 or C-128. With the C-64, press any key to pause and resume; with the C-128, use the no-scroll key to pause.

A lot of features are compressed into the four lines that occupy less than a block of disk space. You'll find it handy for use as a subroutine for other programs.

```
0 REM MICRO READER 64/128 - JIM SANDERS :REM*178
10 INPUT"{SHIFT CLR}{CTRL 2}{CRSR DN}FILENA
ME";F$:INPUT"PRINT Y/N";R$:D=3:IFR$="Y"
THEN D=4:S=7 :REM*64
20 OPEN1,8,2,F$+"M,R":OPEN4,D,S:PRINT"{SH
FT CLR}":PRINTCHR$(14) :REM*137
30 GET#1,A$:IFST=0THENPRINT#4,A$;:WAIT198,
1,1:POKE198,0:GOTO30 :REM*182
40 PRINT#4:CLOSE1:CLOSE4:INPUT"{CRSR DN}AN
OTHER Y/N";Q$:IFQ$="Y"THEN10 :REM*8
```

—JIM SANDERS, KNOXVILLE, TN

\$4FO FANCY PROGRAM NAMES AND TITLES

Personalizing your Basic programs without a line number preceding your name or program title requires a small touch of magic. Here's a six-step guide to accomplish the process after loading in your program:

1. Enter line 0 as: 0 REM"
2. Press return
3. Move the cursor back up to the space at the right of the quotation mark
4. Hold down shift and press the insert-delete key six times
5. Release the shift key and press insert-delete six more times
6. Type in your name or program title and press return

—BILL KENDRICK, COLFAX, CA

\$4F1 CHECK DISK FORMAT

After upgrading from a C-64 and 1541 to a C-128 and 1571, I permanently changed the device number of my 1541 to 9 to use along with the C-128. Since I'm swapping disks between the 1571 and 1541, it is vitally important that I know the format (double- or single-sided) of the disks I use.

I wrote Check Disk Format, a 64- and 128-compatible program that quickly checks the format of a disk in either drive. It'll print to the screen the disk name, I.D. number and the format of the disk. You can use it as a handy subroutine in any program that offers disk access.

```

Ø REM CHECK DISK FORMAT - GEORGE VOTRUBA
                                :REM*93
1Ø S$="{CRSR UP}":FOR I=1 TO 39:S$=S$+" ":
  NEXT:S$=S$+CHR$(13)+"{CRSR UP}":PRINT"{
  SHFT CLR}"                                :REM*38
2Ø PRINT"{CRSR DN}INSERT DISK AND ENTER DE
  VICE NUMBER."                                :REM*217
3Ø INPUT"(8 OR 9 OR Q TO QUIT) ? 8 {4 CRSR
  LFs}";UN$:IF LEFT$(UN$,1)="Q" THEN END
                                :REM*49
4Ø UN=VAL(UN$):IF UN<>8 AND UN<>9 THEN PRI
  NT"{2 CRSR UPs}":GOTO 3Ø                                :REM*64
5Ø PRINT S$;S$;"UNIT NUMBER:"",{CTRL 9}"UN
  :DI$="":ID$=""                                :REM*179
6Ø OPEN 15,UNIT,15:OPEN 5,UNIT,5,"#"
                                :REM*244
7Ø PRINT#15,"U1:"5;Ø;18;Ø                                :REM*96
8Ø FOR I=Ø TO 3:GET#5,FL$:NEXT:IF FL$="" THEN
  FL$=CHR$(Ø)                                :REM*245
9Ø FOR I=4 TO 143:GET#5,A$:NEXT                                :REM*6
1ØØ FOR I=144 TO 161:GET#5,A$:IF A$="" THE
  N A$=CHR$(Ø)                                :REM*199
11Ø :IF ASC(A$)<>16Ø THEN DI$=DI$+A$
                                :REM*2Ø8
12Ø NEXT I:PRINT "DISK NAME:{CTRL 9}",DI$
                                :REM*54
13Ø FOR I=162 TO 163:GET#5,A$:ID$=ID$+A$:N
  EXT:PRINT"DISK I.D.:",ID$                                :REM*22Ø
14Ø PRINT "FORMAT:",,                                :REM*138
15Ø IF ASC(FL$)=128 THEN PRINT "DOUBLE-SID
  ED":GOTO 17Ø                                :REM*22Ø
16Ø PRINT"SINGLE-SIDED"                                :REM*124
17Ø CLOSE5:CLOSE15:GOTO 2Ø                                :REM*133

```

—GEORGE F. VOTRUBA, MISSOULA, MT

\$4F2 EARTHQUAKE SIMULATOR

Add some pizzaz to your latest C-64 game with Screen Shaker 64. This subroutine vigorously "shakes" the screen as many times as indicated by the value of Z, which has a default value of 20. Your small adventure programs can now come alive with excitement.

```

Ø REM SCREEN SHAKER - JOSEPH R. CHARNETSKI
                                :REM*61
1Ø PRINTCHR$(147):FOR D= 1 TO 136                                :REM*7
2Ø PRINT"DEMO ";:NEXT:Z=2Ø:GOSUB4Ø:END
                                :REM*81
3Ø :                                :REM*88
4Ø FOR I=Ø TO 15 STEP 3:POKE 5327Ø,I:NEXT
                                :REM*Ø

```

Pocket Author™

For the C-64

New, exciting creative software from the company that brought you the world famous, best selling "Pocket™ Writer".

Pocket™ Author breaks new barriers. Now you can create your own software applications without an in-depth knowledge of programming.

With Pocket™ Author you can:

- create your own applications with pull down menus, screen management and mouse or joystick control.
- design pop-up menus with as many as eight overlays.
- move an arrow to select an "icon" or image area to be filled with text or pictures.
- "multi-task" sound and animation.
- draw or paint images.
- use the many, many other excellent features.

With Pocket™ Author, you can create games, question and answer programmes, business and educational applications, animation sequences, music, and almost anything you can imagine. The manual contains a tutorial to get you started. There are over 20 help screens summarizing how to use Pocket™ Author. Also included are examples and utilities to facilitate making your own icons and help screens.

Don't wait! Order Pocket™ Author today! You can get the newest breed of "Creativity Software" only from Digital Solutions. Send in the Order Form below or call 416-731-8775 [credit cards orders only].

Regular price is \$59.95 U.S. [\$69.95 Cdn.]

But, our Special Introductory price is only \$39.95 U.S. [\$49.95 Cdn.] and We pay all shipping and handling charges.

Ontario residents add 8% Provincial Sales Tax of \$4.00 [Total of \$53.95]

Please send me Pocket™ Author

Name _____
 Address _____ City _____
 State/Prov. _____ Postal code _____
☐ Payment enclosed ☐ Amex ☐ Visa ☐ MasterCard
 Acct# _____ Exp. ____/____
 Signature _____

Credit card orders must be signed.
 Send to: Digital Solutions Inc., P.O. Box 345, Station A,
 Willowdale, Ontario, Canada M2N 5S9

Circle 46 on Reader Service card.


```
50 J=J+1+(J=Z)*(Z+1):IF J>0 THEN 40:REM*25
60 POKE 53270,200:RETURN :REM*95
```

—JOSEPH CHARNETSKI, PLAINS, PA

\$4F3 WHERE, OH WHERE CAN THAT LITTLE MOUSE BE?

Bought a 1351 mouse recently? Can't find enough room on your desk for smooth operation? No problem, just toss the magazines, disks, coasters and any other assorted clutter off the top of your disk drive and you'll have a great mouse pad.

—AARON PEROMSIK, WORCESTER, MA

\$4F4 MOVING THOSE BYTES

Byte Mover 64 is an unusual, but useful program that any programmer can use. Type in Byte Mover 64 using RUN's Checksum and save it to disk or tape. When run, the program installs a machine language routine that moves large blocks of memory at lightning-fast speed. It moves almost 9000 bytes into screen memory in about half a second. How's that for speed?

Once you've activated the program, use the following syntax to move blocks of memory:

SYS 832,FA,TA,NB-1

FA represents "from address," which is the address the data currently resides; TA is "to address," which is the address the data is to be moved to; and NB-1 is the number of bytes to be moved minus one. For example, to move RUN's Checksum to a new address, run it, then run Byte Mover 64 and enter the following:

SYS 832,49152,32768,169

RUN's Checksum can then be turned on and off with SYS 32768.

```
0 REM BYTE MOVER - MICHAEL MYERS :REM*82
10 SA=832:FOR I=SA TO SA+76:READQ:POKE I,Q
:CK=CK+Q:NEXT :REM*231
20 IF CK<> 11081 THENPRINT"ERROR IN DATA S
TATEMENTS":END :REM*237
30 DATA 162,0,134,251,32,253,174,32,158,17
3,32,247,183,166,251,165,20,149:REM*184
40 DATA 169,165,21,149,170,232,232,224,6,2
08,229,160,0,177,169,145,171,56:REM*229
50 DATA 165,173,233,1,133,173,176,8,198,17
4,165,174,201,255,240,24,24,165:REM*196
60 DATA 169,105,1,133,169,144,3,230,170,24
,165,171,105,1,133,171,144,213 :REM*83
70 DATA 230,172,176,209,96 :REM*26
80 T=TI:FOR I=4096 TO 49152 STEP 999:SYS
SA,I,1024,999:NEXT:T=(TI-T)/60 :REM*26
90 PRINTCHR$(147);CHR$(17);"DONE: 8991 BYT
ES MOVED IN "T" SECONDS" :REM*22
```

—MICHAEL MYERS, BEARDSTOWN, IL

\$4F5 PRINTER GRAPHICS EDITOR 64/128

Designing printer graphics characters with pencil and paper is tedious and time-consuming. Printer Graphics Editor 64/128 eliminates the drudgery and long hours designing

printer graphics characters by making the computer perform the code conversions.

This program works with Commodore MPS-803/1525-compatible printers and dot matrix printers using printer interfaces that offer Commodore printer emulation. The default custom graphics character is a wine glass, which can be changed to anything else desired. Simply design your custom printer graphic by entering asterisks in the grid provided in lines 10 through 70 of the program and pressing return after entering each line.

When run, the program displays the six CHR\$(8) codes that make up the character and a line of code needed to print it out. To print your character, move the cursor up to the line beginning with an Open statement and press return. To use the character in your own program, use a CHR\$(8) followed by the six CHR\$(8) values that appear when you run the program. Refer to your printer and interface manuals for more information on printer graphics characters.

```
0 REM C-64 PRINTER GRAPHICS EDITOR - RICHARD
RD PENN :REM*109
10 DATA"*****" :REM*106
20 DATA"*{ 4 SPACES}*" :REM*157
30 DATA"*{ 2 SPACES}* " :REM*163
40 DATA"{ 2 SPACES}*{ 2 SPACES}" :REM*169
50 DATA"{ 2 SPACES}*{ 2 SPACES}" :REM*191
60 DATA"{ 2 SPACES}*{ 2 SPACES}" :REM*197
70 DATA"*****" :REM*174
80 DIM C$(7,8):FORX=1 TO 7:READ A$:FORY=1 T
O 6:C$(X,Y)=MID$(A$,Y,1):NEXT:NEXT
:REM*103
90 FORX=1 TO 6:FORY=1 TO 7:IF C$(Y,X)=""T
HEN Q=Q+2{UP ARROW}(Y-1) :REM*126
100 NEXT:Q=Q+128:PRINTQ" ";C$=C$+CHR$(Q):
Q=0:NEXT :REM*26
110 PRINT:PRINT:PRINT"OPEN1,4:PRINT#1,CHR$
(8)C$CHR$(15):PRINT#1:CLOSE1{ 2 CRSR UP
S}" :REM*152
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$4F6 64 FULL-SCREEN EDITOR

Over the years, the Magic column has published programs that perform specific screen-editing functions on the C-64. A good example is "Clr-Bottom Key" (Magic \$47E, March 1988) that lets the F1 and F3 keys clear the screen and place the cursor at the bottom of the screen.

My 64 Full-Screen Editor expands on that by offering a screen-editing feature for function keys F1, F3, F5 and F7. F1 erases the line the cursor is on and moves the cursor up one line. F3 also erases the cursor's current line, but moves the cursor down one line. F5 clears the current cursor line, plus all lines below, in effect operating as a partial screen clear. Finally, F7 moves the cursor to the 24th screen line.

Combined with the clr-home and shift/clear-home keys, 64 Full-Screen Editor gives you complete screen-editing capabilities. For example, an entire 80-character program line can be erased by pressing F3, followed by F1. Pressing F7 followed by F5 clears the bottom of the screen for entering Direct mode commands. There's no limit to the number of uses you'll find with 64 Full-Screen Editor.

```
0 REM 64 SCREEN EDIT - LEONARD LENIEWSKI
:REM*243
```


MAGIC

```

10 FORC=53100 TO 53214:READ D:POKE C,D:NEX
   T                                     :REM*7
20 PRINTCHR$(147)"F1 CLEARS CRSR LINE, MOV
   ES UP 1 LINE."                       :REM*223
30 PRINT"F3 CLEARS CRSR LINE, MOVES DOWN 1
   LINE."                               :REM*96
40 PRINT"F5 CLEARS CRSR LINE TO SCREEN BOT
   TOM."                               :REM*144
50 PRINT"F7 MOVES CRSR LINE TO 24TH SCREEN
   LINE."                               :REM*164
60 PRINT"SYS 53100 ACTIVATES PROGRAM."
   :REM*194
70 PRINT"RUN/STOP-RESTORE DE-ACTIVATES PRO
   GRAM."                               :REM*145
80 DATA 120,169,121,141,20,3,169,207,141,2
   1,3,88,96,165,203,205,218,207 :REM*157
90 DATA 240,19,141,218,207,201,4,240,15,20
   1,5,240,27,201,6,240,39,201,3 :REM*53
100 DATA 240,60,76,49,234,56,32,240,255,32
   ,255,233,224,0,240,1,202,24,76 :REM*11
110 DATA 210,207,56,32,240,255,32,255,233,
   224,24,240,1,232,24,76,210,207 :REM*43
120 DATA 56,32,240,255,142,219,207,32,255,
   233,224,24,240,4,232,76,189 :REM*175
130 DATA 207,24,174,219,207,76,210,207,24,
   162,23,160,0,32,240,255,76,49 :REM*239
140 DATA 234,64,23,0,0,25 :REM*220
  
```

—LEONARD LENIEWSKI, SHAWNEE, OK

\$4F7 ALL-PURPOSE ROUNDER

A routine is usually needed for rounding out calculations, especially if currency (dollars and cents) is being calculated. Here's a handy mathematical formula for rounding numbers to the number of decimal places specified in the variable DP:

```
10 DEF FN RD(X)=INT(X*10IDP+.5)/10IDP
```

Now, whenever a calculation needs to be rounded, set DP to the correct number of decimal places. Along with the statement in line 10 above, here's the rest of the code needed to round the square root of 5 to 2 decimal places and print the result:

```
20 DP=2
30 PRINT FN RD(SQR(5))
```

—MIKE FOWLER, ABBOTSFORD, B.C., CANADA ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier and more exciting and enjoyable, send it to:

Magic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

NEW from Digital Solutions

Templates for Pocket Writer™, Pocket Filer™, Pocket Planner™ and, Applications for our newest product, Pocket™ Author for your C-64/128

Now, we've made our "easy to use" programs even easier to use. We did all the "front end" work on these templates and applications so you can use them as they are, or modify them for your own purposes. These templates and application are only available from Digital Solutions and require the appropriate Pocket™ program to run. You will not find them in stores. Please put a check mark in the box next to disk(s) you wish to order.

☐ Pocket Writer™ Template Disk

Includes the following:

- Medical Record
- Invitation
- Purchase Order
- Science Experiment
- Timetable
- Resume
- Will
- Offer To Lease

☐ Pocket Planner™ Template Disk

Includes the following:

- Budget
- Weekly Exercise
- Fuel Efficiency
- Hockey Statistics
- Baseball Statistics
- Checkbook
- Bowling Statistics

☐ Pocket™ Author Application Disk

Includes the following:

- English
- Music
- Fact Quiz
- Jotto
- Funny Face
- Math
- Typing Tutor
- Tic Tac Toe
- Hangman

☐ Pocket Filer™ Template Disk

Includes the following:

- Phone Book
- Music Collection
- Credit Cards
- Books
- VCR List
- Xmas List
- Recipe
- Inventory
- Car Maintenance
- School Records
- Bartender
- Disk Organizer

Don't wait! Order your Pocket™ Templates and Applications today! You can only get them from Digital Solutions. Send in this Order Form or call 416-731-8775 credit cards orders only.

Our Special Introductory price for each disk is only \$24.95 U.S. [\$29.95 Cdn.] and We pay all shipping and handling charges. Ontario residents add 8% Provincial Sales Tax of \$2.39 [Total of \$32.34] Can. Name _____

Address _____ City _____

State/Prov. _____ Postal code _____

☐ Payment enclosed ☐ Amex ☐ Visa ☐ MasterCard

Acct# _____ Exp. ____/____

Signature _____

Credit card orders must be signed.

Send to: Digital Solutions Inc., P.O. Box 345, Station A,
Willowdale, Ontario, Canada M2N 5S9

Circle 46 on Reader Service card.

MEGA-MAGIC

Scroll, scroll, scroll your background, gently up the screen.

This program jazzes up a text display screen on the C-128 in 80-Column mode by animating the background with a smooth scrolling display that rivals the Amiga.

Type in the demo program. It'll poke in the machine language, then create a simple display to show the scrolling effect. The machine language is in the form of a Basic loader in lines 150-510. Incorporate this part of the listing into your own programs and activate it with SYS DEC ("0B00"). It will then scroll the screen until you press a key, whereupon the screen clears and returns program control to you.

The effect is generated by continuously redefining the space character in the uppercase/graphics character set

(which is in VDC RAM in 80-Column mode). I used a simple grid pattern for the effect, but you can use your own sets of data to generate other effects. (A second set of values for you to experiment with are in the Data statements.)

When you need a space character for purposes other than scrolling, use the lowercase/uppercase character set. And finally, you can change the scrolling speed by poking location 2975 with some value other than the default, 25.

To generate your own screens, print spaces to get the scrolling effect you want, or simply clear the screen and print other characters where you don't want the scrolling to appear. Then use the SYS command to get things scrolling.

—LOU WALLACE, RUN STAFF

Listing 1. C-128 Background Animator.

```

10 REM 80 COLUMN BACKGROUND ANIMATOR
11 REM BY LOU WALLACE
12 FAST:REM FAST MODE WORKS BEST
13 GOSUB 150
14 PRINTCHR$(142);"{SHFT CLR}{5 CRSR DNs}"
15 PRINT"{20 CRSR RTs}{CTRL 9}{CTRL 6}{38
  COMD @s}{CTRL 0}{CTRL 4}"
16 FOR I=1 TO 10
17 PRINT"{20 CRSR RTs}{CTRL 9}{CTRL 6}{COM
  D M}{38 SPACES}{COMD G}{CTRL 1}{CTRL 0
  }{CTRL 4}"
18 NEXT I
19 PRINT"{20 CRSR RTs}{CTRL 9}{CTRL 6}{3
  8 COMD Ts}{CTRL 1}{CTRL 0}{CTRL 4}"
20 PRINT"{21 CRSR RTs}{CTRL 9}{CTRL 1}{40
  SPACES}{CTRL 0}{CTRL 4}"
21 PRINT"{HOME}{12 CRSR DNs}{31 CRSR RTs}
  {CTRL 9}{CTRL 6}{CTRL 0}YOUR MESSAGE H
  ERE{CTRL 0}{CTRL 4}"
22 SYS DEC("0B00"):PRINT"{SHFT CLR}"
23 END
24 FOR I=DEC("0B00") TO DEC("0BF7"):READ
  A:POKE I,A:NEXT:RETURN
25 REM POKE 2975 WITH A DIFFERENT VALUE T
  O SPEED UP
26 REM OR SLOW DOWN THE DISPLAY
27 DATA 173,0,255,141,182,11,165,14,141,0
  ,255,169
28 DATA 0,141,179,11,32,82,11,160,0,32,22
  8,255
29 DATA 240,10,32,134,11,173,182,11,141,0
  ,255,96
30 DATA 140,180,11,172,179,11,185,184,11,
  172,180,11
31 DATA 32,108,11,238,179,11,200,192,8,20
  8,218,32
32 DATA 150,11,160,0,173,179,11,201,64,20
  8,5,169
33 DATA 0,141,179,11,32,82,11,76,21,11,16
  2,18
34 DATA 169,34,32,96,11,232,169,0,32,96,1
  1,96
35 DATA 142,0,214,44,0,214,16,251,141,1,2
  14,96
36 DATA 141,183,11,173,0,214,41,32,240,24
  9,173,0
37 DATA 214,41,32,240,249,173,183,11,162,
  31,32,96
38 DATA 11,96,32,82,11,160,0,169,0,32,108
  ,11
39 DATA 200,192,8,208,248,96,160,0,140,18
  1,11,172
40 DATA 181,11,192,25,208,3,76,178,11,160
  ,0,200
41 DATA 192,0,208,251,238,181,11,76,155,1
  1,96,0,0,0,0,0
42 REM CHANGE THE FOLLOWING 8 CHARACTER D
  EFINITIONS (64 BYTES)
43 REM IF YOU WANT TO USE A DIFFERENT PAT
  TERN
44 DATA 255,1,1,1,1,1,1,1
45 DATA 2,2,2,2,2,2,2,255
46 DATA 4,4,4,4,4,4,255,4
47 DATA 8,8,8,8,8,255,8,8
48 DATA 16,16,16,16,255,16,16,16
49 DATA 32,32,32,255,32,32,32,32
50 DATA 64,64,255,64,64,64,64,64
51 DATA 128,255,128,128,128,128,128,128
52 REM REM OUT LINES 340-410 FOR A DIFFER
  ENT PATTERN
53 DATA 128,64,32,16,8,4,2,1
54 DATA 64,32,16,8,4,2,1,128
55 DATA 32,16,8,4,2,1,128,64
56 DATA 16,8,4,2,1,128,64,32
57 DATA 8,4,2,1,128,64,32,16
58 DATA 4,2,1,128,64,32,16,8
59 DATA 2,1,128,64,32,16,8,4
60 DATA 1,128,64,32,16,8,4,2

```

RUN it right: C-128, in 80-Column mode

DOS Basics, Multitasking 64 & More!

PLUS:

► **A New Games Column**

► **More Software Reviews**

► **1988 Index**

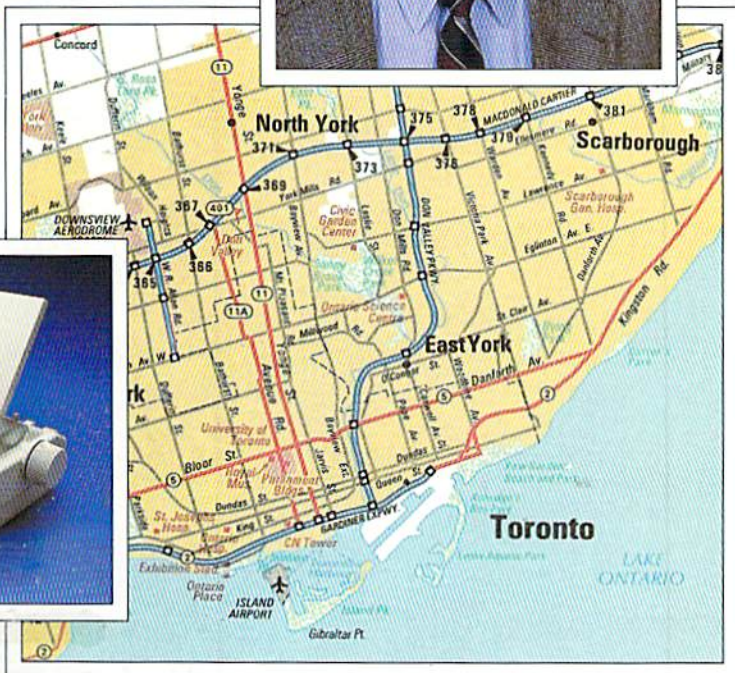
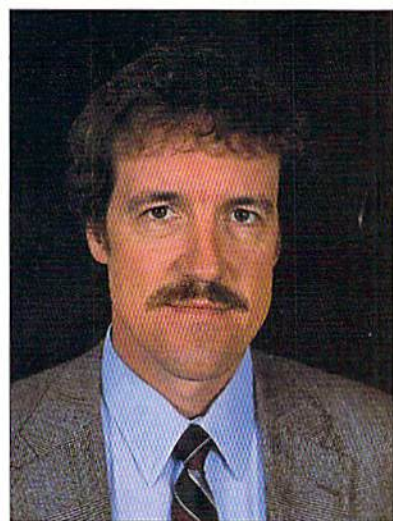
RUN

THE COMMODORE 64/128 USER'S GUIDE

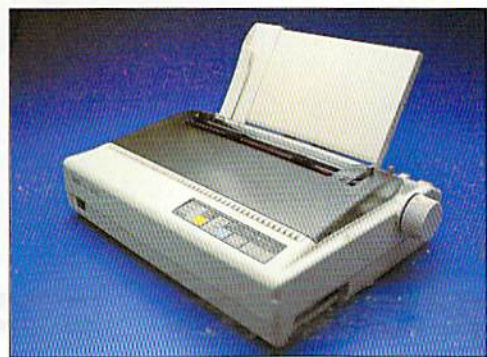
January 1989
An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

WHO Is the Most
Creative Programmer?



WHAT
Is the
Best
Printer?



WHERE Is the Most
Active Computing Area?



MAGIC

Need better control over your cursor? Want to highlight menu options on both the 64 and 128? These and other tricks will help you get more use out of your computer.

Compiled by TIM WALSH

\$4F8 64 WINDOWS

Programmers have been writing window utilities for the C-64 since the first one rolled off the assembly line. Now there's a machine language windowing system for the C-64 entitled 64 Windows. It's short, easy to use and simple to incorporate into your own programs.

I've included a demonstration program that creates two windows and shows how windows are created. Although the program is fully relocatable in memory, its default location is 49152. Consequently, SYS 49152 will copy screen memory, SYS 49263 will create a window and SYS 49335 will replace screen memory. After activating 64 Windows, poke the following locations with their respective values to color and position windows on the screen:

Left side: Poke 251, (0-38)
Right side: Poke 252, (1-39)
Bottom: Poke 253, (1-24)
Character color: Poke 254, (0-15)

```
0 REM C-64 WINDOW - TODD NEUMILLER :REM*26
10 J=49152:FORA=JTOJ+253:READD:CK=CK+D:POK
   E A, D:NEXT :REM*176
20 IFCK<>35641THENPRINT"ERROR IN DATA.":EN
   D :REM*7
30 POKE251,9:POKE252,29:POKE253,10:POKE254
   ,14 :REM*238
40 SYS49152:SYS49263 :REM*189
50 PRINTCHR$(19)SPC(50)"TO SAVE THE SCREEN
   !" :REM*199
60 PRINTSPC(16)"SYS49152" :REM*84
70 PRINTSPC(54)"FOR WINDOWS" :REM*168
80 PRINTSPC(16)"SYS49263" :REM*145
90 PRINTSPC(55)"HIT A KEY!" :REM*11
100 GETK$:IFK$=""THEN100 :REM*28
110 POKE251,11:POKE252,27:POKE253,8:SYS492
   63 :REM*14
120 PRINTCHR$(19)SPC(52)"RESTORE SCREEN!"
   :REM*252
130 PRINTSPC(16)"SYS49335" :REM*166
140 PRINTSPC(55)"HIT A KEY!" :REM*121
150 GETK$:IFK$=""THEN150 :REM*105
160 SYS49335 :REM*95
170 END :REM*43
180 DATA 162,216,134,188,169,0,133,187,162
   ,0,160,0,173,254,0,145,187,200:REM*174
190 DATA 192,40,144,246,24,165,187,105,40,
   133,187,165,188,105,0,133,188 :REM*165
200 DATA 232,224,25,208,226,162,0,189,0,4,
   157,0,60,232,224,255,208,245 :REM*132
210 DATA 173,255,4,141,255,60,162,0,189,0,
```

```
5,157,0,61,232,224,255,208,245 :REM*1
220 DATA 173,255,5,141,255,61,162,0,189,0,
   6,157,0,62,232,224,255,208,245:REM*154
230 DATA 173,255,6,141,255,62,162,0,189,0,
   7,157,0,63,232,224,255,208,245 :REM*18
240 DATA 96,162,4,134,188,169,0,133,187,16
   2,0,172,251,0,169,117,145,187 :REM*151
250 DATA 200,169,32,145,187,200,204,252,0,
   144,246,172,252,0,169,118,145 :REM*150
260 DATA 187,24,165,187,105,40,133,187,165
   ,188,105,0,133,188,232,236,253:REM*230
270 DATA 0,208,212,172,251,0,169,120,145,1
   87,200,204,252,0,144,246,169 :REM*190
280 DATA 120,145,187,96,162,0,189,0,60,157
   ,0,4,232,224,255,208,245,173 :REM*12
290 DATA 255,60,141,255,4,162,0,189,0,61,1
   57,0,5,232,224,255,208,245,173:REM*242
300 DATA 255,61,141,255,5,162,0,189,0,62,1
   57,0,6,232,224,255,208,245,173 :REM*88
310 DATA 255,62,141,255,6,162,0,189,0,63,1
   57,0,7,232,224,255,208,245,96 :REM*173
```

—TODD NEUMILLER, SPOKANE, WA

\$4F9 128 WINDOWS

This trick shows a few shortcuts for making windows on the C-128 in both 40- and 80-Column modes. Because the syntax of the Window command is so confusing and difficult to remember, I've simplified it here by listing the four easily remembered Poke commands you'll need in order to create windows:

POKE 228, (0-24) Bottom of window
POKE 229, (0-24) Top of window
POKE 230, (0-79) Left margin of window*
POKE 231, (0-79) Right margin of window*

*Note: A maximum value of 39 can be used with the 40-column screen.

After you've created a window using any of the above Pokes, you can deactivate it by pressing run-stop/restore or by pressing the home key twice.

—JOHN COLGAN, RAYTOWN, MO

\$4FA 64 MEMORY SAVER

While the C-64 lacks a BSave (binary save) command for saving areas of memory to disk, this shortcoming can be overcome with only six lines of Basic code. The listing, 64 Memory Saver, saves a section of memory containing a machine language routine to disk as a fast loading machine language file.

New, exciting creative software from the company that brought you the world famous, best selling "PocketTM Writer".

PocketTM Author breaks new barriers. Now you can create your own software applications without an in-depth knowledge of programming.

With PocketTM Author you can:

- create your own applications with pull down menus, screen management and mouse or joystick control.
- design pop-up menus with as many as eight overlays.
- move an arrow to select an "icon" or image area to be filled with text or pictures.
- "multi-task" sound and animation.
- draw or paint images.
- use the many, many other excellent features.

With PocketTM Author, you can create games, question and answer programmes, business and educational applications, animation sequences, music, and almost anything you can imagine. The manual contains a tutorial to get you started. There are over 20 help screens summarizing how to use PocketTM Author. Also included are examples and utilities to facilitate making your own icons and help screens.

Don't wait! Order PocketTM Author today! You can get the newest breed of "Creativity Software" only from Digital Solutions. Send in the Order Form below or call 416-731-8775 [credit cards orders only].

Regular price is \$59.95 U.S. [\$69.95 Cdn.]

But, our Special Introductory price is only \$39.95 U.S. [\$49.95 Cdn.] and We pay all shipping and handling charges.

Ontario residents add 8% Provincial Sales Tax of \$4.00 [Total of \$53.95]

Please send me PocketTM Author

Name _____
 Address _____ City _____
 State/Prov. _____ Postal code _____
☐ Payment enclosed ☐ Amex ☐ Visa ☐ MasterCard
 Acct# _____ Exp. ____/____
 Signature _____

Credit card orders must be signed.
 Send to: Digital Solutions Inc., P.O. Box 345, Station A,
 Willowdale, Ontario, Canada M2N 5S9

Circle 46 on Reader Service card.

As an example, let's say you have a utility that resides in locations 49152 to 49252 and is activated with SYS 49152. Just load and run the utility, then load and run 64 Memory Saver. Enter a starting address of 49152, an ending address of 49252 and a filename, such as "49152 UTILITY".

After you've saved the utility to disk with 64 Memory Saver, you can load it with LOAD "49152 UTILITY",8,1 and activate it with SYS 49152.

```

Ø REM 64 MEMORY SAVER - JOE CHARNETSKI
                                     :REM*71
1Ø INPUT"STARTING ADDRESS :";S      :REM*235
2Ø INPUT"ENDING ADDRESS :";E:E=E+1:REM*1Ø3
3Ø INPUT"FILENAME : ";F$:SYS 57812F$,8
                                     :REM*175
4Ø POKE 173,S/256:POKE 172,S-256*PEEK(173)
                                     :REM*28
5Ø POKE 78Ø,172:POKE 782,E/256      :REM*73
6Ø POKE 781,E-256*PEEK(782):SYS 65496
                                     :REM*95
  
```

—JOSEPH CHARNETSKI, PLAINS, PA

\$4FB JOYSTICK-CONTROLLED CURSOR

If you've ever wanted to move the C-64's cursor with something other than the cursor keys, then 64 Cursor Joystick is for you. Once typed in and enabled with SYS 49152, a joystick in port 2 lets you move the cursor anywhere around the screen.

You'll find that this program will never interfere with other program operations. It can be disabled with run-stop/restore, and the cursor speed can be adjusted by entering POKE 49174, X, where X is a value between 3 (fastest) and 15 (slowest).

```

Ø REM CURSOR JOYSTICK - LEONARDO PAKMAN
                                     :REM*63
1Ø FOR T= 49152 TO 49249:READD:POKET,D:CK=
  CK+D:NEXT                          :REM*187
2Ø IF CK<> 12Ø25 THENPRINT"ERROR IN DATA S
  TATEMENTS..." :END              :REM*151
3Ø SYS 49152:PRINT"CURSOR JOYSTICK ACTIVAT
  ED"                                :REM*116
4Ø DATA 12Ø,169,13,141,2Ø,3,169,192,141,21
  ,3,88,96,234,234,234,2Ø6,97      :REM*187
5Ø DATA 192,2Ø8,73,169,4,141,97,192,173,Ø,
  22Ø,2Ø1,127,24Ø,61,169,1,133    :REM*195
6Ø DATA 198,173,Ø,22Ø,2Ø1,126,2Ø8,8,169,14
  5,141,119,2,76,49,234,173,Ø      :REM*229
7Ø DATA 22Ø,2Ø1,125,2Ø8,8,169,17,141,119,2
  ,76,49,234,173,Ø,22Ø,2Ø1,119    :REM*78
8Ø DATA 2Ø8,8,169,29,141,119,2,76,94,192,1
  
```


MAGIC

```
73,0,220,201,123,208,5,169 :REM*97
90 DATA 157,141,119,2,76,49,234,4 :REM*156
—LEONARDO PAKMAN, BUENOS AIRES, ARGENTINA
```

\$4FC 64 DISK DRIVE LIGHTSHOW

Use this C-64 bit of magic to add mystery to your programs. 64 Disk Drive Lightshow makes your 1541 or 1571 disk drive's light gradually fade off and on after you've executed the SYS 49152 command. It also suspends access to the drive until you deactivate it with run-stop/restore and turn off the disk drive.

```
0 REM 64 DISK DRIVE LIGHT SHOW - JEREMIAH
MANN :REM*157
10 FOR T=49152 TO 49286:READD:POKET,D:CK=C
K+D:NEXT :REM*161
20 IF CK<> 19407 THENPRINT"ERROR IN DATA S
TATEMENTS..." :REM*7
30 PRINTCHR$(147)"TO ACTIVATE THE DISK DRI
VE LIGHT, ENTER SYS 49152" :REM*86
40 DATA 169,1,162,8,160,15,32,186,255,169,
0,32,189,255,32,192,255,162 :REM*173
50 DATA 1,32,201,255,162,0,169,77,32,210,2
55,169,45,32,210,255,169,87 :REM*237
60 DATA 32,210,255,138,32,210,255,169,5,32
,210,255,169,1,32,210,255 :REM*168
70 DATA 189,90,192,32,210,255,138,72,32,20
4,255,162,1,32,201,255,104 :REM*89
80 DATA 170,232,224,45,208,204,169,85,32,2
10,255,169,67,32,210,255,32 :REM*164
90 DATA 204,255,96,169,254,170,32,21,5,202
,224,1,208,248,32,21,5,232 :REM*100
100 DATA 224,255,208,248,240,235,138,72,73
,255,168,169,248,141,0,28 :REM*121
110 DATA 202,208,248,169,240,141,0,28,136,
208,248,104,170,96 :REM*234
—JEREMIAH MANN, VISALIA, CA
```

\$4FD 64/128 HIGHLIGHTED MENU ROUTINE

While there are programs for creating menu systems for both the C-64 and C-128, most have some limitations, and that's usually a lack of compatibility with both computers. You'll find my 64/128 Highlighted Menu Routine has virtually no limitations and is completely compatible with both the C-64 and the C-128.

The 64/128 Highlighted Menu Routine highlights and selects menu options as you scroll through them with the up-down cursor key. Configuring this routine for your own programs is remarkably easy—just substitute your own menu options in the Data statements at the beginning of the routine and change the variable NI to one less than the number of items in the menu.

For added flexibility, you can change the variables X and Y at the beginning of the program to set the horizontal (X) and vertical (Y) locations of the menu.

```
0 REM 64/128 HIGHLIGHTED MENU ROUTINE - RE
X DAY :REM*120
10 X=12:Y=8:Y$="{CTRL 9}":Z$="{CTRL 0}":IF
PEEK(65532)=61 THEN 30 :REM*78
20 XR=781:YR=XR+1:SR=YR+1:GOTO 40:REM USED
BY C-64 :REM*134
30 XR=7:YR=XR+1:SR=YR-3:REM USED BY C-128
```

```
40 NI=4:FOR H=0 TO NI:READ OP$(H):NEXT
:REM*79
50 DATA "ADD TRANSACTIONS","VIEW TRANSACTI
ONS","PAYMENT SUMMARY","BUDGET":REM*230
60 DATA "EXIT" :REM*130
70 PRINTCHR$(147):YY=Y:GOSUB180 :REM*165
80 FORH= 0 TO NI:PRINTTAB(X)OP$(H):NEXT
:REM*225
90 YY=Y+A:GOSUB 180:PRINTY$:OP$(A);Z$
:REM*201
100 GETA$:IF A$=""THEN 100 :REM*173
110 GOSUB 180:PRINTOP$(A) :REM*162
120 IF A$="{CRSR DN}"THEN A=A+1:IF A>NI TH
EN A=0 :REM*28
130 IF A$="{CRSR UP}"THEN A=A-1:IF A=-1 TH
EN A=NI :REM*154
140 IF A$<> CHR$(13) THEN 90 :REM*33
150 PRINT:PRINTTAB(5)"{5 CRSR DN$}YOU SELE
CTED ";Y$:OP$(A);Z$ :REM*127
160 IF OP$(A)="EXIT"THEN END :REM*104
170 FORT=1TO1000:NEXT:GOTO 70 :REM*196
180 POKE XR,YY:POKE YR,X:POKE SR,0:SYS 655
20:RETURN :REM*73
```

—REX DAY, MOUNTAIN HOME, ID

\$4FE WHEN ALL ELSE FAILS...

It's Sunday night, and you need to print a report or paper due Monday morning just as your printer ribbon breaks. Magic can help. Remove the broken ribbon and, if needed, set the print head gap for three sheets of paper. Then put into the printer two sheets of paper with a sheet of carbon paper in between. The top sheet will be illegible, but the bottom sheet will print as a carbon copy. While this is a great trick in emergencies, it's still no substitute for having a second printer ribbon handy.

—KEN ASTON, L'AMABLE, ONTARIO, CANADA

\$4FF THE OLD PROGRAM FILE DILEMMA

In the January 1988 issue of *RUN*, Magic trick \$464, "Lou's Sequential Saga," showed how to convert a Basic program into a sequential file that could then be read by word processors and telecommunications programs. The code was a simple Direct Mode command as follows:

```
OPEN 8,8,"FILENAME,S,W":CMD8:LIST:PRINT#8:CLOSE 8:
```

While this is a handy bit of magic, if your word processor or terminal program can't read sequential files, novice computer users won't be able to load the sequential file. If you're one of the hapless souls whose word processor can't read sequential files, just substitute a ,P,W for the ,S,W that follows the word FILENAME in the above example. You'll then be able to read the file into your word processor. However, it won't be as "clean" and well-formatted as the sequential file versions.

A lowercase m will be substituted for all returns in your file. All you have to do is use your word processor's Search-with-Replace function to scan the document and replace the m's with returns.

—ANTHONY AGUIRRE, HAVERTOWN, PA

MAGIC

\$500 DETECTING THE RESTORE KEY

Detecting most key presses on the C-64 is easily accomplished through the use of one or more Peek commands. However, detecting a restore key press is difficult. You can use my Restore Key Detection Routine in any program without affecting the run-stop/restore combination.

As written, the program monitors the RS-232 port for activity, and it pokes location 673 with a 0 to keep disk access normal. Just don't perform any RS-232 accesses when using this routine in your own programs.

```
Ø REM C-64 RESTORE KEYPRESS DETECTION - DE
  NNIS MAGAR                                :REM*187
1Ø PRINTCHR$(147):POKE 5659Ø,1:POKE 673,1
                                           :REM*1Ø1
2Ø PRINT"{HOME}PRESS RESTORE TO SEE MESSAG
  E"                                         :REM*215
3Ø IF PEEK (673)=128 THEN POKE 673,1:GOTO
  5Ø                                         :REM*114
4Ø GOTO 2Ø                                  :REM*164
5Ø PRINT"PRESS RESTORE AGAIN TO END"
                                           :REM*99
6Ø IF PEEK (673)=128 THEN POKE 673,Ø:END
                                           :REM*9Ø
7Ø GOTO 6Ø                                  :REM*2Ø2
```

—DENNIS MAGAR, WYLIE, TX

\$501 1670 AUTO-ANSWER DISABLE

My Commodore 1670 modem is great for 1200-baud telecomputing, except that it lacks a switch to disable auto-answering. 1670 users should keep the following program handy, which can be run when you're finished using the modem. It disables the auto-answer feature without disconnecting the modem.

```
10 OPEN 2,2, CHR$(6) + CHR$(10)
20 PRINT#2,"ATSO=0":CLOSE 2
```

—CRAIG STERN, HARTSDALE, NY

\$502 NO-NONSENSE 1670 AUTO-ANSWER DISABLE

Fellow 1670 users should go to their nearest Radio Shack store and ask for part #43-127, which costs about \$8. The part is a ring silencer, and you plug your incoming phone line into one end and the other end of the ring silencer into your 1670. Then you can plug a line to your telephone from the other telephone line port on the modem.

The silencer keeps the 1670 from answering incoming calls, yet allows outgoing calls. Best of all, the silencer has a light that comes on with each ring. You'll never have to run another auto-answer disable program or unplug the modem again.

—FRED J. SODERLUND, GOLETA, CA ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

Magic pays \$10-\$40 for each trick published in the column.

If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

NEW from Digital Solutions

Templates for Pocket Writer™, Pocket Filer™, Pocket Planner™ and Applications for our newest product, Pocket™ Author for your C-64/128

Now, we've made our "easy to use" programs even easier to use. We did all the "front end" work on these templates and applications so you can use them as they are, or modify them for your own purposes. These templates and application are only available from Digital Solutions and require the appropriate Pocket™ program to run. You will not find them in stores. Please put a check mark in the box next to disk(s) you wish to order.

☐ Pocket Writer™ Template Disk

Includes the following:

- Medical Record
- Invitation
- Purchase Order
- Science Experiment
- Timetable
- Resume
- Will
- Offer To Lease

☐ Pocket Planner™ Template Disk

Includes the following:

- Budget
- Weekly Exercise
- Fuel Efficiency
- Hockey Statistics
- Baseball Statistics
- Checkbook
- Bowling Statistics

☐ Pocket™ Author Application Disk

Includes the following:

- English
- Music
- Fact Quiz
- Jotto
- Funny Face
- Math
- Typing Tutor
- Tic Tac Toe
- Hangman

☐ Pocket Filer™ Template Disk

Includes the following:

- Phone Book
- Music Collection
- Credit Cards
- Books
- VCR List
- Xmas List
- Recipe
- Inventory
- Car Maintenance
- School Records
- Bartender
- Disk Organizer

Don't wait! Order your Pocket™ Templates and Applications today! You can only get them from Digital Solutions. Send in this Order Form or call 416-731-8775 credit cards orders only).

Our Special Introductory price for each disk is only \$24.95 U.S. [\$29.95 Cdn.] and We pay all shipping and handling charges. Ontario residents add 8% Provincial Sales Tax of \$2.39 [Total of \$32.34] Can. Name _____

Address _____ City _____

State/Prov. _____ Postal code _____

☐ Payment enclosed ☐ Amex ☐ Visa ☐ MasterCard

Acct# _____ Exp. ____/____

Signature _____

Credit card orders must be signed.

Send to: Digital Solutions Inc., P.O. Box 345, Station A, Willowdale, Ontario, Canada M2N 5S9

Circle 27 on Reader Service card

SUCCESSFUL SOFTWARE GIMMICKS. . .AND FLOPS!

CREATE GRAPHS WITH GEOCHART

RUN

THE COMMODORE 64/128 USER'S GUIDE

February 1989
An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

Fire Power For Your Commodore

Tap the Potential of Your

- ▶ 1581 Disk Drive
- ▶ 1351 Mouse
- ▶ RAM Expander

Plus:

- ▶ Address Book 128
- ▶ Chummy Checkers
- ▶ Lite Fantastic
- ▶ Valentine Maker
- ▶ And More



MAGIC

Copying the C-128 DOS Shell; saving screen space with a mini-scrolling menu; and making the shift sound like a "Morse code" key.

Compiled by TIM WALSH

\$503 SPEAKING OF QUICK REFERENCE...

Lots of people use Rolodex card holders to keep names and addresses of friends, relatives and business contacts. Computer users like myself also find the design of these devices handy for another use—Magic tricks from *RUN*. I owned a large, cumbersome Rolodex, a birthday present that was awkward to use for business, so I switched to a smaller one for that purpose and the large one has done nicely for the last few years as a quick reference tool for locating previously published Magic tricks.

Rolodexes are arranged in alphabetical order, so cards in the A category contain tricks dealing with topics such as arrays and addition, the B category has hints and tips on binary numbers and BLoad enhancements, and so on. I also include the author's name whenever possible and the issue in which the trick appeared. If space permits, I include the trick itself.

While my friends are fussing and waiting for their databases to load so that they can retrieve computing information, I have everything I need right at my fingertips. Try the Rolodex trick; I think you'll like it!

—MARTY RIVERS, SAN DIEGO, CA

\$504 BY JIMINY, DID YOU HEAR THAT?!

If you're writing a text adventure or interactive game and want to create the mood of a warm summer evening, run this little routine of mine on either your C-64 or C-128. It creates the authentic sound of crickets chirping at random intervals. Of course, this may fall into the wrong hands and kids might try to drive Mom, Dad or their favorite little sister crazy with this sound. So, listen up, kids: Be sure that you let the folks know it is just your computer, before they call in expensive exterminators!

```
Ø REM 64/128 CRICKETS - BECKY CHUNG:REM*61
1Ø A=54296:B=A-2Ø:C=B-3:D=B+1:E=B+2:POKEA,
  15:POKEB,15:POKEE,Ø :REM*214
2Ø FORT=22ØTO255:POKEB,17:FORG=1TO2:NEXT:P
  OKEC,T:POKEB,128:NEXT :REM*234
3Ø FORS=1 TO(RND(5))*25ØØ:NEXT :REM*28
4Ø GOTO 1Ø :REM*162
```

—BECKY CHUNG, MADISON, WI

\$505 MAILING LABEL ALTERNATIVE

If you want to print just one or perhaps several mailing labels, you know the process is a tedious one. First, you must remove the continuous form paper, re-adjust the tractor feed sprockets, crank in the mailing labels, waste half-a-dozen labels trying to get them aligned correctly, and...well, you get the picture.

So, do what I do! When printing several labels, print them

out on standard continuous-form computer paper, cut the labels out with a pair of scissors, then glue them to the envelope or package with contact cement. The process wastes a sheet of computer paper, but it also saves a lot of time and aggravation.

—DAVE WILSON, MARIETTA, GA

\$506 C-64 TEXT SCREEN SAVER

Wouldn't it be nice to save a screen containing text and graphics characters? The next time you create a screen worth saving, run 64 Screen Saver first. When the screen you want to save appears, press the Commodore and F1 keys at the same time. The screen will be saved as a four-block file called TEXT, as you can see in F\$ in line 10 (but you can use any filename). To load and display your creation, enter LOAD "TEXT",8,1.

```
Ø REM 64 TEXT SCREEN SAVER - MICHAEL ONSTA
D :REM*15
1Ø F$="TEXT":P=679:GOSUB2Ø:GOTO3Ø :REM*13
2Ø Q=LEN(F$):POKE P,Q:FOR I=1TOQ:POKE P+I,
  ASC(MID$(F$,I,1)):NEXT:RETURN :REM*36
3Ø FOR J=828 TO 988:READA:POKE J,A:NEXT
  :REM*212
4Ø SYS 828 :REM*174
5Ø PRINT"CREATE SCREEN, THEN PRESS"
  :REM*251
6Ø PRINT"COMMODORE KEY & F1 TOGETHER"
  :REM*125
7Ø PRINT"TO SAVE SCREEN." :REM*56
8Ø NEW :REM*242
9Ø DATA 12Ø,169,78,141,2Ø,3,169,3,141,21,3
  ,169,Ø,141,219,3,88,96,173 :REM*161
1ØØ DATA 219,3,24Ø,3,76,49,234,165,2Ø3,2Ø1
  ,4,2Ø8,124,173,141,2,2Ø1,2,2Ø8:REM*185
11Ø DATA 117,141,219,3,165,157,141,22Ø,3,1
  69,Ø,133,157,162,1,134,2Ø5,166:REM*253
12Ø DATA 2Ø7,2Ø8,252,169,1,133,2Ø4,173,Ø,2
  21,73,3,133,252,173,24,2Ø8,41 :REM*1Ø1
13Ø DATA 24Ø,1Ø2,252,1Ø6,1Ø2,252,1Ø6,133,2
  52,169,Ø,133,251,169,1,162,8 :REM*85
14Ø DATA 16Ø,Ø,32,186,255,173,167,2,162,16
  8,16Ø,2,32,189,255,162,232,24 :REM*15
15Ø DATA 165,252,1Ø5,3,168,169,251,32,216,
  255,162,Ø,134,251,16Ø,216,132 :REM*38
16Ø DATA 252,173,184,2,162,185,16Ø,2,32,18
  9,255,169,251,162,232,16Ø,219 :REM*235
17Ø DATA 32,216,255,169,Ø,141,219,3,173,22
  Ø,3,133,157,76,49,234,Ø,Ø :REM*47
```

—MICHAEL ONSTAD, VAN NUYS, CA

New, exciting creative software from the company that brought you the world famous, best selling "PocketTM Writer".

PocketTM Author breaks new barriers. Now you can create your own software applications without an in-depth knowledge of programming.

With PocketTM Author you can:

- create your own applications with pull down menus, screen management and mouse or joystick control.
- design pop-up menus with as many as eight overlays.
- move an arrow to select an "icon" or image area to be filled with text or pictures.
- "multi-task" sound and animation.
- draw or paint images.
- use the many, many other excellent features.

With PocketTM Author, you can create games, question and answer programmes, business and educational applications, animation sequences, music, and almost anything you can imagine. The manual contains a tutorial to get you started. There are over 20 help screens summarizing how to use PocketTM Author. Also included are examples and utilities to facilitate making your own icons and help screens.

Don't wait! Order PocketTM Author today! You can get the newest breed of "Creativity Software" only from Digital Solutions. Send in the Order Form below or call 416-731-8775 [credit cards orders only].

Regular price is \$59.95 U.S. [\$69.95 Cdn.].

But, our Special Introductory price is only \$39.95 U.S. [\$49.95 Cdn.] and We pay all shipping and handling charges.

Ontario residents add 8% Provincial Sales Tax of \$4.00 [Total of \$53.95]

Please send me PocketTM Author

Name _____
Address _____ City _____
State/Prov. _____ Postal code _____
☐ Payment enclosed ☐ Amex ☐ Visa ☐ MasterCard
Acct# _____ Exp. ____/____
Signature _____

Credit card orders must be signed.

Send to: Digital Solutions Inc., P.O. Box 345, Station A,
Willowdale, Ontario, Canada M2N 5S9

Circle 46 on Reader Service card

\$507 C-128 DOS SHELL COPIER

Creating a working copy of the C-128 DOS Shell from the 1571 Test/Demo disk perplexes all but the most skilled programmers. My listing, DOS Shell Copy Boot, simplifies the procedure to give a copy that works as well as the original.

Boot the DOS Shell program. Once it's activated, select the File Copy option. Copy the file named DOS Shell and save it to a second disk. Then save my program to the second disk. Whenever you want to activate the Shell, just run my program. There you have it: a perfect DOS Shell copy!

```
Ø REM 128 DOS SHELL COPY BOOT - RICK CRUZ          :REM*47
1Ø A$="BANK12:SYS6656":KEY1,A$+CHR$(13)           :REM*71
2Ø PRINTA$+"{4 CRSR UPs}":POKE 2Ø8,1:POKE          :REM*172
    842,13:BLOAD"DOS SHELL"
```

—RICK CRUZ, SAN GERMAN, PR

\$508 64 MINI-SCROLLING MENU

When your screen space is limited, but you need to display a menu with many options, a stationary display is not the answer. You can display the needed text along with eye-catching animation by using 64 Mini-Scrolling Menu, a horizontally scrolling menu routine that uses only one screen line to display the options.

To incorporate the routine into your own programs, use lines 20-110 of the listing. In line 30, C\$ defines which keys are used to make a selection. A\$ in line 40 contains the message to be scrolled. You'll also need to modify the On-GoTo statement in line 80 to direct program execution after you make a selection. The menu outline matches the current cursor color, while the color of the menu bar is determined by the last CHR\$ code in line 60.

```
Ø REM 64 MINI-SCROLLING MENU - RICHARD PEN          :REM*17
N                                                     :REM*19
1Ø PRINTCHR$(147)CHR$(5):POKE 5328Ø,14:POK        :REM*109
    E 53281,Ø:POKE 214,17:PRINT                    :REM*15
2Ø REM SCROLLING MENU ROUTINE                      :REM*177
3Ø C$="1234":REM SELECTION KEYS                    :REM*170
4Ø A$="[1] PURPLE{5 SPACES}[2] BLUE{5 SPAC        :REM*165
    Es}[3] YELLOW{5 SPACES}[4] GREEN{5 SPAC        :REM*160
    Es}":REM MESSAGE                                :REM*165
5Ø X$=CHR$(164):FORX=1TO2:FORT=1TO4Ø:PRINT        :REM*160
    X$;:NEXT:X$=CHR$(163):PRINT:NEXT:REM*1Ø
6Ø N$=A$+A$:PRINTCHR$(145)CHR$(145)CHR$(14        :REM*160
    5)CHR$(159);:REM MENU BAR COLOR:REM*17Ø
7Ø FOR T=1TOLEN(N$)/2:PRINTCHR$(18)MID$(N$,        :REM*85
    ,T,4Ø):GETK$:Z=1                                :REM*85
8Ø IF K$=MID$(C$,Z,1)THENONZGOTO12Ø,13Ø,14
```


MAGIC

```

0,150:REM EXIT MENU                :REM*151
90 Z=Z+1:IF Z<=LEN(C$)THEN80       :REM*181
100 FOR DL=1TO30:NEXT:PRINTCHR$(145)CHR$(145)CHR$(145);:NEXT:GOTO70 :REM*2
110 REM YOUR PROGRAM CONTINUES HERE:REM*13
120 POKE53280,4:END                 :REM*254
130 POKE53280,6:END                 :REM*5
140 POKE53280,7:END                 :REM*19
150 POKE53280,5                     :REM*4

```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$509 MORSE CODE KEY 128

Make the shift key on your C-128 sound just like a "Morse code" key. Use my program, Morse Code Key 128, as a routine in your own programs, or use it as a stand-alone program. You can alter the sound tone by changing the value 3000 in line 20.

```

0 REM MORSE CODE KEY 128 - LOUIS R. FERNANDEZ :REM*41
10 IF PEEK(211)=0 THEN 10             :REM*172
20 SOUND 1,1E4,3000                  :REM*152
30 IF PEEK(211)=1 THEN 30             :REM*255
40 SOUND 1,1,0                       :REM*172
50 GOTO10                             :REM*172

```

—LOUIS R. FERNANDEZ, CEDAR GROVE, NJ

\$50A LINESPACE 64

Linespace 64 is an interrupt-driven program that changes the line spacing of a Basic listing as it's being printed. After loading and running the program, enter a Poke 681,X command, where X is any value from 1 to 255, to determine the spacing. As a demonstration, the program defaults to triple line spacing. You can direct the output to the screen, a printer or a disk drive.

```

0 REM LINESPACE 64 - LEON S. BRANDY :REM*168
10 SA=49152:FOR T=0 TO 39:READ A:B=B+A:POKE SA+T,A:NEXT :REM*188
20 IF B<>5170 THENPRINT"ERROR IN DATA STATEMENTS..." :REM*34
30 PRINT"POKE 681,X TO SET LINESPACING" :REM*197
40 HI=SA/256:LO=SA-(HI*256) :REM*128
50 POKE 806,LO:POKE 807,HI:POKE 681,3:END :REM*37
60 DATA 141,167,2,142,168,2,173,167,2,201,13,240,3,76,202,241,173 :REM*84
70 DATA 167,2,174,169,2,202,240,6,32,202,2,41,24,144,247,173,167,2 :REM*237
80 DATA 174,168,2,76,202,241 :REM*10

```

—LEON S. BRANDY, CHRISTIANSTED, ST. CROIX, VI

\$50B MORE ON GEOS AND PRINTERS

Because of space constraints in last month's geoWatch column, I was unable to address a GEOS question posed by many readers. In my most recent printer article ("Printers on Parade," RUN, October 1988), I mentioned that printers can be set to a desired graphics density and that line spacing can also be set prior to activating GEOS. How, many readers

have written in to ask, is that accomplished?

Actually, no secret programming skills are needed to perform the magic on either GEOS 64 or GEOS 128, but you need a printer with more than one graphics density. If you're using an interface, set it to Transparent mode so that unwanted codes do not interfere with your printer commands. Next, with the computer and disk drive(s) on and the printer on and online, enter the command that sets the desired density, followed by the command to set line spacing. (Check your printer manual for exact details on selecting densities and line spacing.) For demonstration purposes, a typical density command might appear as:

```

OPEN 4,4:PRINT#$,CHR$(27),CHR$(90),CHR$(2),CHR$(3),CHR$(1),CHR$(255):CLOSE4

```

A typical line spacing command might appear as:

```

OPEN 4,4:PRINT#4,CHR$(27),CHR$(51),CHR$(22):CLOSE4

```

Once you enter the command to set the density, the print-head will move a fraction of an inch or make a sound. At that time, you can activate the GEOS System disk. C-64 users should enter: LOAD "0:",8,1. C-128 users just type in BOOT and press return.

Be sure to select a printer driver, such as Epson FX-80, that will allow the printer commands to remain active. Commodore-compatible printer drivers will corrupt the printer commands you entered prior to booting GEOS. Have fun experimenting with various densities and line spacings!

—TIM WALSH, MAGIC COLUMNIST

\$50C STARS AND SPHERES SPECTACULAR

Once you type in and run Stars and Spheres 128, a 40-Column mode program, the fun begins. First, stars slowly fill the black screen, after which five overlapping spheres are drawn in 3-D. Once the drawing is complete, pressing a key brings you back to the text screen. Pressing a key again redisplay the graphics screen.

```

0 REM STARScape & 3-D SPHERES - STAN BANAS :REM*104
10 COLOR0,1:GRAPHIC1,1 :REM*82
20 FOR T=0 TO 1000 :REM*225
30 X=INT(RND(0)):Y=INT(RND(0)):C=INT(RND(0)) :REM*250
40 X=INT(RND(Y)*319):Y=INT(RND(X)*199):C=INT(RND(C)*16+1) :REM*12
50 COLOR1,C:DRAW1,X,Y TO X,Y :REM*132
60 NEXTT :REM*103
70 COLOR1,8 :REM*241
80 GRAPHIC1,0:FORC=0TO4:READX,Y :REM*19
90 FORZ=0TO50:STEP5 :REM*93
100 CIRCLE1,X,Y,Z,50 :REM*32
110 CIRCLE1,X,Y,50,Z :REM*186
120 NEXTZ:NEXTC :REM*182
130 DATA159,99,109,49,209,149,209,49,109,149 :REM*11
140 GETKEYA$:GRAPHIC0:PRINT"({SHIFT CLR}) PRESS A KEY TO SEE AGAIN":GETKEYA$:GRAPHIC1,0:GOTO140 :REM*100

```

—STANLEY D. BANASH, JR., LOS ANGELES, CA

\$50D 64/128 SPINNER

In fairness to 64 owners who can't view the above program

MAGIC

in action, I've written a program that's almost as exciting. 64/128 Spinner draws and animates a figure that looks like an anemometer. When the program runs, it gives the illusion that the figure is spinning. 64/128 Spinner works on the 64 and on the C-128 in 40-Column mode. To change the background color in 80-Column, Direct mode, use the command Color 6,X, where X is a value from 2 to 15.

```

Ø REM 64/128 3-D SIMULATION - STAN BANASH
                                     :REM*13
1Ø POKE 5328Ø,12:PRINTCHR$(142);" {SHFT CLR
  } {12 CRSR DNs}";TAB(19);" {CTRL 4} {SHFT
  B} {CRSR UP}"
                                     :REM*92
2Ø FORC=ØTO9:READA$(C):NEXTC
                                     :REM*194
3Ø FORC=ØTO9:PRINTTAB(11);" {CRSR UP}";A$(C)
  ):NEXTC
                                     :REM*17
4Ø FORC=9TOØSTEP-1:PRINTTAB(11);" {CRSR UP}
  ";A$(C):NEXTC
                                     :REM*2ØØ
5Ø GOTO 3Ø
                                     :REM*176
6Ø DATA" {CTRL 2} {COMD M} {6 COMD @s} {CTRL
  4} {COMD @} {CTRL 1} {6 COMD @s} {COMD G} {4
  SPACES}"
                                     :REM*183
7Ø DATA" {CTRL 2} {COMD M} {6 COMD @s} {CTRL
  4} {COMD @} {CTRL 1} {6 COMD @s} {COMD G} {4
  SPACES}"
                                     :REM*169
8Ø DATA" {CTRL 2} {2 SPACES} {COMD N} {5 COMD
  @s} {CTRL 4} {COMD @} {CTRL 1} {5 COMD @s} {
  COMD H} {5 SPACES}"
                                     :REM*135
9Ø DATA" {CTRL 2} {3 SPACES} {COMD L} {4 COMD
  @s} {CTRL 4} {COMD @} {CTRL 1} {4 COMD @s} {
  COMD J} {6 SPACES}"
                                     :REM*145
1ØØ DATA" {CTRL 2} {4 SPACES} {CTRL 9} {COMD K
  } {CTRL Ø} {3 COMD @s} {CTRL 4} {COMD @} {C
  TRL 1} {3 COMD @s} {COMD K} {7 SPACES}"
                                     :REM*163
11Ø DATA" {CTRL 2} {5 SPACES} {CTRL 9} {COMD K
  } {CTRL Ø} {2 COMD @s} {CTRL 4} {COMD @} {C
  TRL 1} {2 COMD @s} {COMD K} {8 SPACES}"
                                     :REM*1ØØ
12Ø DATA" {CTRL 2} {6 SPACES} {CTRL 9} {COMD H
  } {CTRL Ø} {COMD @} {CTRL 4} {COMD @} {CTRL
  1} {COMD @} {CTRL 9} {COMD N} {CTRL Ø} {9
  SPACES}"
                                     :REM*31
13Ø DATA" {CTRL 2} {7 SPACES} {CTRL 9} {COMD G
  } {CTRL Ø} {CTRL 4} {COMD @} {CTRL 1} {CTRL
  9} {COMD M} {CTRL Ø} {1Ø SPACES}"
                                     :REM*121
14Ø DATA" {CTRL 1} {8 SPACES} {CTRL 9} {CTRL
  Ø} {1Ø SPACES}"
                                     :REM*153
15Ø DATA" {CTRL 2} {8 SPACES} {CTRL 9} {CTRL
  Ø} {1Ø SPACES}"
                                     :REM*61

```

—STANLEY D. BANASH, JR., LOS ANGELES, CA ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

NEW from Digital Solutions

Templates for Pocket Writer™, Pocket Filer™, Pocket Planner™ and Applications for our newest product, Pocket™ Author for your C-64/128

Now, we've made our "easy to use" programs even easier to use. We did all the "front end" work on these templates and applications so you can use them as they are, or modify them for your own purposes. These templates and application are only available from Digital Solutions and require the appropriate Pocket™ program to run. You will not find them in stores. Please put a check mark in the box next to disk(s) you wish to order.

☐ **Pocket Writer™ Template Disk**

Includes the following:

- Medical Record
- Invitation
- Purchase Order
- Science Experiment
- Timetable
- Resume
- Will
- Offer To Lease

☐ **Pocket Planner™ Template Disk**

Includes the following:

- Budget
- Weekly Exercise
- Fuel Efficiency
- Hockey Statistics
- Baseball Statistics
- Checkbook
- Bowling Statistics

☐ **Pocket™ Author Application Disk**

Includes the following:

- English
- Music
- Fact Quiz
- Jotto
- Funny Face
- Math
- Typing Tutor
- Tic Tac Toe
- Hangman

☐ **Pocket Filer™ Template Disk**

Includes the following:

- Phone Book
- Music Collection
- Credit Cards
- Books
- VCR List
- Xmas List
- Recipe
- Inventory
- Car Maintenance
- School Records
- Bartender
- Disk Organizer

Don't wait! Order your Pocket™ Templates and Applications today! You can only get them from Digital Solutions. Send in this Order Form or call 416-731-8775 credit cards orders only].

Our Special Introductory price for each disk is only \$24.95 U.S. [\$29.95 Cdn.] and We pay all shipping and handling charges. Ontario residents add 8% Provincial Sales Tax of \$2.39 [Total of \$32.34] Can. Name _____

Address _____ City _____

State/Prov. _____ Postal code _____

☐ Payment enclosed ☐ Amex ☐ Visa ☐ MasterCard

Acct# _____ Exp. ____/____

Signature _____

Credit card orders must be signed.

Send to: Digital Solutions Inc., P.O. Box 345, Station A, Willowdale, Ontario, Canada M2N 5S9

Circle 27 on Reader Service card.

■ TAX TIME HELP IS HERE!

RUN

THE COMMODORE 64/128 USER'S GUIDE

March 1989

An IDGC/I
Publication

U.S.A. \$2.95

CANADA \$3.95

U.K. £2.00

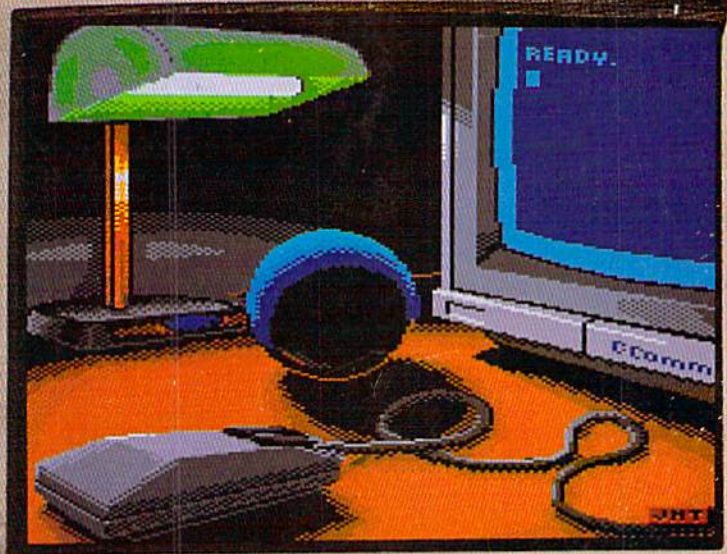
RUN Paint

The Most Powerful
Graphics Tool
Ever Published!

Tips to Create Your Own
Dazzling 64/128 Displays

A Super Strategy Game
For Your C-64/128

Two Hot Combat
Adventures!



bit mapped graphics

2

3

4

5

1

Listing



MAGIC

Autoboot the 1581, play Meteor Dodge 64, expand or reduce the C-64 keyboard buffer, and extend your printer's ribbon life.

Compiled by TIM WALSH

\$50E DISK DRIVE RUNNING? DON'T TURN ON THE PRINTER!

Recently, while testing a serial Commodore-compatible printer for an upcoming *RUN* review, I broke a fundamental printer rule: I turned on the printer while a file was loading from disk. The result was a lot of garbage on the screen and a partially loaded file.

While it's unlikely that the disk drive could suffer any physical damage, turning on the printer while the drive is busy is potentially disastrous. If you unknowingly loaded in a file and corrupted it in the process, you might also inadvertently re-save it and lose the original. So always remember: Never turn on a printer while the drive is busy.

—TIM WALSH, *RUN* STAFF

\$50F AUTOBOOTING THE 1581

Commodore 128D owners who also own a 1581 disk drive face two problems if they want to autoboot or automatically activate a 1581 file. First of all, the C-128D's built-in 1571 disk drive has no DIP switches to reconfigure it with a different device number. Second, the built-in drive can't be de-activated to let the 1581 autoboot.

However, you can make an autoboot disk for the 1571 that boots the desired file from the 1581. Begin by writing a line of Basic such as:

```
10 RUN"1581 FILE",U9
```

(Of course, "1581 File" can be any 1581 file.)

Next, save this program as a file to your 1571 disk, then use the Autoboot Maker program from the 1571 Test/Demo disk to make that an autoboot file. Now, when you turn on your 128D with that disk in the 1571 drive and your second file in the 1581, the program will activate the desired file on the 1581. Many alternatives are possible, such as having autoboot files in both drives. In that case, an autoboot program in the 1571 drive need only consist of a line such as:

```
10 BOOTU9
```

This autoboots the file on the 1581. After you've done this a few times, it will be second nature to you.

—KEITH SILLS, REGO PARK, NY

\$510 METEOR DODGE 64

"Captain, she's going to break apart in the meteors!"

Meteor Dodge 64 places you in control of your own starship, indicated by the blue diamond on the screen, which you must pilot through a meteor shower. After you successfully maneuver your ship through a shower, the program goes to the next highest level, which has more meteors for you to contend with.

For those who like to tinker with programs, I'll list the

functions of the variables: SC is the score, S is the character position of the ship, C is the color of the ship, and L and X are the level and number of meteors per line, respectively.

```
0 REM METEOR DODGE - GARRET D. WILSON
:REM*161
10 PRINT "{SHFT CLR}{CTRL 7}":POKE53280,0:
   POKE53281,0:SC=0:C=55316:DIM R(40):L=1:
   X=10:REM*17
20 S=1044:PRINT"{11 CRSR DNs}"TAB(16)"LEVE
   L 1":FOR A=55316 TO 56295:POKE A,1:NEXT
   :REM*44
30 FORN=1TO2000:NEXT:PRINT"{SHFT CLR}{30 C
   RSR DNs}{CTRL 2}{CRSR DN}":FORT=1TO75
   :REM*77
40 POKES,90:POKEC,6:SC=SC+1:FORG=1 TO X:R(
   G)=(1984+(INT(RND(0)*40))):GOSUB120
   :REM*190
50 POKER (G),42:NEXT:PRINT"{CRSR DN}";
   :REM*208
60 IF PEEK(S)=42 THEN POKE C,6:GOTO 90
   :REM*90
70 NEXT:L=L+1:PRINT"{SHFT CLR}{CTRL 7}{12
   CRSR DNs}"TAB(16)"LEVEL"L:X=X+2:IFX>39
   THEN X=40:REM*239
80 GOTO 30:REM*206
90 POKE S,102:FORN=1TO2000:NEXT:PRINT"END
   OF GAME":PRINT"SCORE= "SC:REM*170
100 POKE 198,0:INPUT"PLAY AGAIN (Y/N)":PA$
   :IF PA$="Y" THEN RUN:REM*53
110 END:REM*238
120 GETM$:P=PEEK(56320):REM*157
130 IF (M$=","ORP=123)ANDS=1024THENS=1063:
   C=55335:M$="":POKE1024,32:POKE55296,1
   :REM*137
140 IF M$=","ORP=123THENS=S-1:C=C-1:POKES+
   1,32:POKEC+1,1:REM*85
150 IF (M$="."ORP=119)ANDS=1063THENS=1024:
   C=55296:M$="":POKE1063,32:POKE55335,1
   :REM*46
160 IF M$="."ORP=119THENS=S+1:C=C+1:POKES-
   1,32:POKEC-1,1:REM*219
170 IF PEEK(S)=42 THEN POKEC,6:GOTO 90
   :REM*232
180 POKES,90:POKEC,6:RETURN:REM*180
```

—GARRET D. WILSON, CHelsea, OK

\$511 CARB CLEANER VERSATILITY

Should your printer stop printing one or more rows of dots in each character, you probably have a clogged print- ▶

head, caused by ink, dust, ribbon fabric and other contaminants. Don't rush out to buy a new printhead; instead, spray it with some carburetor spray cleaner or similar spray solvent.

Unbolt the printhead from the printer's carriage and unplug the wire connecting it to the printer. Place the printhead over a newspaper and spray the pins thoroughly with the cleaner. Then use an old toothbrush to scrub loose any matter clogging the pins. Continue spraying and scrubbing the printhead until it's clean.

Let the printhead dry thoroughly for at least an hour before re-installing. Chances are, it'll print like new once you re-install it.

—DWIGHT D. MOODY, GROTON, VT

\$512 64 KEYBOARD BUFFER EXPANDER

The C-64's keyboard buffer is a major limitation when used as a dynamic keyboard—it only has a capacity of ten characters. 64 Keyboard Buffer Expander is an interrupt-driven utility that expands the capacity of the keyboard buffer by 245 characters by relocating it to a new memory location.

After you've typed in and run the program, you can use and program it the same way you would the default buffer. With a 255-character limit, you'll want to incorporate this program into all of your dynamic keyboard routines.

```

Ø REM 64 KEYBOARD BUFFER EXPANDER - RICHARD
D PENN                                :REM*11Ø
1Ø A=88:B=255:C=56334:D=65535:POKE1,55:POK
EC,PEEK(C)AND(B-1)                    :REM*84
2Ø POKEA+7,Ø:POKEA+8,16Ø:POKEA+2,B:POKEA+3
,B:POKEA,B:POKEA+1,B:SYS41919         :REM*227
3Ø POKED,PEEK(D):POKEC,PEEK(C)OR1:POKEC-9,
56:POKE1,53                           :REM*3Ø
4Ø POKE588Ø5,Ø:POKE588Ø6,192:POKE5881Ø,1:P
OKE58811,192                          :REM*17
5Ø POKE58813,Ø:POKE58814,192          :REM*146
6Ø POKE6Ø221,Ø:POKE6Ø222,192:POKE649,255
                                     :REM*11Ø
7Ø REM DEMO BELOW                     :REM*247
8Ø PRINTCHR$(147)"EXPANDED KEYBOARD BUFFER
DEMO"                                  :REM*187
9Ø FORT=49152 TO 494Ø7:POKET,65:NEXT:POKE1
98,255                                 :REM*222

```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$513 64 KEYBOARD BUFFER REDUCER

If you write programs that prompt for user input, you might find the 64's default ten-character keyboard buffer to be a tad too big for some tasks. I've discovered a command that performs the functional opposite of the above trick. Just enter POKE 649,X in your program, where X is any value from 1 to 10 that determines the size of the C-64's keyboard buffer.

—JEN ST. CLAIR, BELLEFONTE, PA

\$514 GENERAL HINTS & TIPS

I thought it would be appropriate to pass along a few hints and tips on Commodore hardware that I've found useful, both at work and at home. First, if your 1581 sits atop another disk drive and slips around, get a bottle of window cleaner and a clean cloth. Flip the 1581 over and spray its feet with

the cleaner and wipe them clean. Next, spray and wipe the top of the disk drive it sits on. Voila! No more slipping and sliding.

Commodore 128 users, like myself, who have large fingers, might find pressing the recessed reset button an exercise in futility. I glued a wire nut sized for 12 and 14 gauge wire to the reset button using Krazy Glue and now can easily reset the computer.

Finally, to reduce heat buildup, I've placed hard plastic ten-disk diskholders under my computer's power supply and under the 1541 disk drive. I've also glued four 3/4-inch corks to the bottom of my 1541 disk drive for improved ventilation.

I hope RUN readers find these tips as useful as I have.

—PATRICK WEST, COLUMBUS, OH

\$515 A DIFFERENT KIND OF INPUT

Eliminate the question mark from all Input statements in both 64 and 128 programs by opening a channel to the keyboard. Both the C-64 and C-128 can use the command OPEN 2,0 to access the keyboard, so by writing an input routine, question marks following Input statements can be a thing of the past.

The following program demonstrates how to write an input routine that will eliminate the question mark in Input statements, yet work just like an Input statement.

```

Ø REM 64/128 NO QUESTION MARK INPUT - CHAD
HELFFENBERGER                        :REM*28
1Ø OPEN2,Ø                           :REM*83
2Ø PRINT"ENTER THE ANSWER TO 5 TIMES 5"
                                     :REM*115
3Ø INPUT#2,T                          :REM*216
4Ø IF T<>25THENPRINT"NO, "T" IS WRONG":CLO
SE2:END                               :REM*238
5Ø PRINT"{CRSR DN}RIGHT, "T" IS CORRECT"
                                     :REM*6
6Ø CLOSE2                             :REM*65

```

—CHAD HELFFENBERGER, OWENSBORO, KY

\$516 C-64 FILE OPEN COUNTER

Whenever you need to know the number of files open on your C-64 or C-128 in 64 mode, just enter:

```
PRINT PEEK(152)
```

The number that appears is the number of files currently open.

—CHAD HELFFENBERGER, OWENSBORO, KY

\$517 64/128 GREATEST COMMON FACTORS

As a math teacher, I've found my students often have difficulty finding the greatest common factor of a pair of whole numbers. I wrote the following program, 64/128 Greatest Common Factors, to quickly find the answer. As the name implies, the program works on both the C-64 and C-128.

```

Ø REM GREATEST COMMON FACTOR - TIM MCCAFFE
RTY                                  :REM*225
1Ø INPUT"LARGER #";L                 :REM*19
2Ø INPUT"SMALLER #";S                 :REM*14
3Ø IF L<S THEN RUN                     :REM*46
4Ø IF L<1 OR S<1 THENPRINT"NUMBER MUST BE
GREATER THAN 1":RUN                  :REM*13Ø

```


MAGIC

```

50 IF INT(L/S)=L/S THEN PRINT "GREATEST COMM
   ON FACTOR=";S:END :REM*49
60 FOR J=2 TO INT(SQR(S)) :REM*196
70 IF INT(L/J)=L/J AND INT(S/J)=S/J THEN G
   CF=J :REM*107
80 IF INT(L/(S/J))=L/(S/J) GOTO 110 :REM*81
90 NEXTJ :REM*113
100 GOTO 130 :REM*170
110 PRINT "GREATEST COMMON FACTOR = ";S/J
   :REM*203
120 END :REM*248
130 PRINT "GREATEST COMMON FACTOR = ";GCF
   :REM*42

```

—TIM MCCAFFERTY, FLORENCE, AL

\$518 FLASHY 64 DISK LOADS

Make loading programs more interesting and less boring by using Flashy 64 Disk Loads in either Direct mode or in your programs. After typing in and running the program, whenever the disk drive loads a file, the C-64's screen border will rapidly cycle through all 16 colors until the drive stops.

The interrupt-driven program won't be affected by most other programs. Pressing the run-stop/restore key combination will disable it, while POKE 1,53 will re-enable it.

```

0 REM C-64 FLASHY DISK LOADS - RICHARD PEN
   N :REM*193
10 A=88:B=255:C=56334:D=65535:POKE 1,55:POK
   EC,PEEK(C)AND(B-1) :REM*84
20 POKE A+7,0:POKE A+8,160:POKE A+2,B:POKE
   A+3,B:POKE A,B:POKE A+1,B:SYS 41919
   :REM*227
30 POKE D,PEEK(D):POKE C,PEEK(C) OR 1:POKE
   C-9,56:POKE 1,53 :REM*30
40 FOR T=679 TO 679+8:READ D:POKE T,D:NEXT
   :REM*25
50 DATA 238,32,208,120,169,0,76,22,238
   :REM*244
60 POKE 60947,76:POKE 60948,167:POKE 60949
   ,2 :REM*40

```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$519 RIBBON STORAGE TIPS

Here's a handy tip for both new printer ribbons and color ribbons that are used infrequently: Store all nylon and fabric printer ribbons in resealable plastic bags. You'll find that they won't dry out as soon as they will when sitting in their original boxes or in the printer.

—DON ENGLERT, GREEN RIVER, WY ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

Pocket Author™

For the C-64

New, exciting creative software from the company that brought you the world famous, best selling "Pocket™ Writer".

Pocket™ Author breaks new barriers. Now you can create your own software applications without an in-depth knowledge of programming.

With Pocket™ Author you can:

- create your own applications with pull down menus, screen management and mouse or joystick control.
- design pop-up menus with as many as eight overlays.
- move an arrow to select an "icon" or image area to be filled with text or pictures.
- "multi-task" sound and animation.
- draw or paint images.
- use the many, many other excellent features.

With Pocket™ Author, you can create games, question and answer programmes, business and educational applications, animation sequences, music, and almost anything you can imagine. The manual contains a tutorial to get you started. There are over 20 help screens summarizing how to use Pocket™ Author. Also included are examples and utilities to facilitate making your own icons and help screens.

Don't wait! Order Pocket™ Author today! You can get the newest breed of "Creativity Software" only from Digital Solutions. Send in the Order Form below or call 416-731-8775 [credit cards orders only].

Regular price is \$59.95 U.S. [\$69.95 Cdn.]

But, our Special Introductory price is only \$39.95 U.S. [\$49.95 Cdn.] and We pay all shipping and handling charges.

Ontario residents add 8% Provincial Sales Tax of \$4.00 [Total of \$53.95]

Please send me Pocket™ Author

Name _____
 Address _____ City _____
 State/Prov. _____ Postal code _____
☐ Payment enclosed ☐ Amex ☐ Visa ☐ MasterCard
 Acct# _____ Exp. ____/____
 Signature _____

Credit card orders must be signed.

Send to: Digital Solutions Inc., P.O. Box 345, Station A,
 Willowdale, Ontario, Canada M2N 5S9

Circle 46 on Reader Service card.

- CES Showcases C-64 Games
- An Inside Look At Your Disk Drive

**Bridging the
MS-DOS/
C-128
Gap!**

RUN

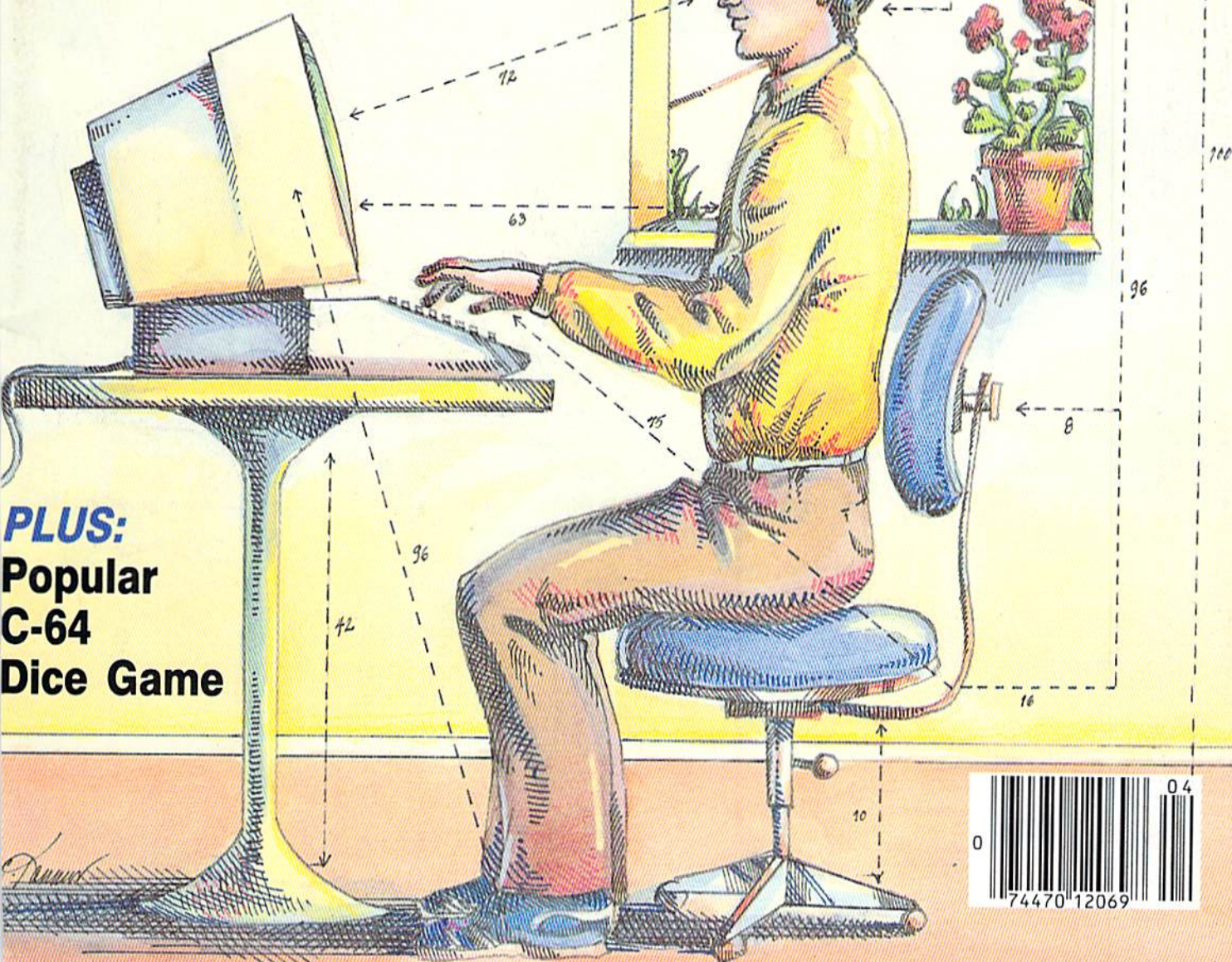
THE COMMODORE 64/128 USER'S GUIDE

April 1989
An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

Health Tips

On Using Your
Commodore



PLUS:
Popular
C-64
Dice Game



MAGIC

Give your C-64 an Insert mode; make downloading from RUN's BBS a snap; or try out a moving-message routine.

Compiled by TIM WALSH

\$51A READING ALL FILETYPES

Hardly a Magic column or two goes by without presenting some sort of file reading utility. By now, most RUN readers are familiar with the following commands:

Read a Sequential file: OPEN 8,8,8,"0:file,s,r"

Read a Program file: OPEN 8,8,8,"0:file,p,r"

This process can be simplified, and it allows for the reading of all file types, including relative and user files. Just use a question mark in place of the first letter of the command as follows:

Read all filetypes: OPEN 8,8,8,"0:file,?,r".

—HOWARD LEW, SAN FRANCISCO, CA

\$51B MS-DOS-TO-C-128 TRANSPORTER

It has been generally true that even small programs posed large problems when a computerist wanted to convert MS-DOS Basic programs from an IBM-compatible with the intention of transporting them to work on the C-128. And converting the file into a format that permitted the C-128 to tokenize keywords shared by both Commodore and MS-DOS Basic was an exercise in futility.

My MS-DOS-to-C-128 program makes transporting your favorite MS-DOS Basic programs to the C-128 a lot easier. The MS-DOS Basic program you want to convert must first be saved to an MS-DOS disk as an ASCII file. Then you can use a utility such as The Big Blue Reader to convert and save the MS-DOS ASCII file to a Commodore-formatted disk as a Commodore-compatible sequential file. After typing in and saving the MS-DOS-to-C-128 program below, run it, and it will create a binary program on disk called ASCII Loader.

When you're ready to start, follow this simple two-step transporting process:

1. Enter: BLOAD"ASCII LOADER"
2. Enter: POKE 58,160:CLR:OPEN 1,8,8,"seq.filename,S,R":
SYS 4866

In the above example, "seq.filename" is the filename of the MS-DOS Basic program saved to a Commodore disk.

The sequential Basic program file is automatically read from disk and tokenized into Basic 7.0 using the C-128's keyboard buffer. Then it is simply a matter of editing any keywords that aren't compatible and saving the program to a Commodore-formatted disk as a program file.

```
0 REM MS-DOS TO C-128 TRANSPORTER - DAVID
  KAPSANIS :REM*45
10 FOR I=4866 TO 5033:READA:CK=CK+A:POKE I
  ,A:NEXT :REM*96
20 IF CK<>19296 THEN PRINT"ERROR IN DATA S
  TATEMENTS...":END :REM*24
30 BSAVE"ASCII LOADER",B0,P4866 TO P5034
```

```
:REM*35
40 NEW :REM*202
50 DATA 120,169,0,133,251,141,0,21,169,96,
  133,252,141,1,21,169,251,141 :REM*123
60 DATA 185,2,162,1,32,198,255,176,77,32,2
  07,255,162,1,160,0,32,119,255 :REM*186
70 DATA 165,144,208,63,238,0,21,230,251,20
  8,235,238,1,21,230,252,76,29 :REM*237
80 DATA 19,165,251,205,0,21,208,7,165,252,
  205,1,21,240,83,169,3,197,208 :REM*185
90 DATA 208,3,108,0,19,169,251,162,1,160,0
  ,32,116,255,166,208,157,74,3 :REM*250
100 DATA 230,208,230,251,208,213,230,252,7
  6,58,19,169,1,32,195,255,32 :REM*76
110 DATA 204,255,169,0,133,251,169,96,133,
  252,238,0,21,208,3,238,1,21 :REM*109
120 DATA 120,173,20,3,141,0,19,173,21,3,14
  1,1,19,169,58,141,20,3,169,19 :REM*32
130 DATA 141,21,3,88,96,173,0,19,141,20,3,
  173,1,19,141,21,3,108,0,19 :REM*100
```

—DAVID KAPSANIS, ERIE, PA

\$51C 64 INSERT MODE

One of the major weaknesses of the C-64's Basic editor is its lack of an Insert mode. Most computers have an Insert mode in Basic that "pushes" characters over to the right of the cursor to simplify inserting characters into program listings. C-128 users just need to press ESC A to turn on Insert mode and ESC C to turn it off. C-64 users, though, must first place the cursor to the left of the text, hold down the insert-delete key until they think they have enough space, type in text, and then delete excess spaces.

My program, 64 Insert Mode, gives you this mode and improves the flexibility of the 64's built-in Quote mode. After typing it in and saving it to disk, run 64 Insert mode to activate the routine. Press the control and shift keys at the same time to toggle Insert mode on and off, and press run-stop to turn off the normal C-64 Quote mode and the Insert mode.

Another benefit of the program is that if you deactivate it by pressing run/stop-restore, it can be reactivated by pressing return without an entry.

```
0 REM 64 INSERT MODE - SCOTT WEISGARBER :REM*151
10 FOR T=53130 TO 53246:READ A:POKE T,A:CK
  =CK+A:NEXT :REM*16
20 IF CK<>15472 THEN PRINT"ERROR IN DATA S
  TATEMENTS...":END :REM*211
30 SYS 53130 :REM*166
40 DATA 169,76,133,115,169,227,133,116,169
```



```

,207,133,117,169,1,141,156      :REM*0
50 DATA 207,96,0,173,156,207,240,47,165,20
3,201,8,144,41,201,64,240,37    :REM*171
60 DATA 201,51,240,33,201,63,240,23,197,19
7,240,25,165,157,240,21,165    :REM*226
70 DATA 212,208,17,169,1,133,198,169,148,1
41,119,2,208,6,169,0,133,212   :REM*161
80 DATA 133,216,173,141,2,201,5,208,8,173,
156,207,73,1,141,156,207,76    :REM*196
90 DATA 72,235,230,122,208,2,230,123,173,1
43,2,201,157,240,12,120,169    :REM*198
100 DATA 157,141,143,2,169,207,141,144,2,8
8,76,121,0                      :REM*69

```

—SCOTT WEISGARBER, MONROEVILLE, NJ

\$51D SONGS IN THE KEY OF C OR F?

In Magic trick \$359 (RUN, November 1986), I told my fellow tricksters that the SID chip in my C-128 played music in the key of F rather than the key of C. I was pleasantly surprised to discover that my new C-128D's SID chip plays in the key of C. I guess that's one of the long list of improvements incorporated into the C-128D.

Regardless, to determine which musical key your C-128 plays in, I wrote the following program, Key of C or F. It first plays a C scale, followed by an F scale.

```

0 REM KEY OF F OR KEY OF C - NEAL SMITH
                                :REM*65
10 PRINT"{SHFT CLR}LISTEN TO THE KEY OF C.
.. "                            :REM*181
20 VOL 9:READ C:SOUND1,C,30:IF C=0 THEN 40
:ELSE GOTO20                    :REM*124
30 DATA 4297,4822,5412,5724,6429,7217,8102
,8578,0                          :REM*179
40 SLEEP2                        :REM*211
50 PRINT"{CRSR DN}NOW THE KEY OF F...
                                :REM*124
60 READ F:SOUND 1,F,30:IF F=0 THEN END:ELS
E GOTO 60                       :REM*233
70 DATA 5724,6429,7217,7643,8578,9644,1082
4,11448,0                       :REM*187

```

—NEAL SMITH, ROCHESTER, NY

\$51E DOWNLOADING TIPS

The RUN editorial offices regularly get calls (and an occasional visit) from frustrated neophyte RUNning Board users who log on to our bulletin board and attempt to download some of the great software that's available there. Once they list the programs in a download area, then select a file for downloading, they're stumped at the "Ready for x-modem download" prompt that suddenly appears.

Here's what to do at that point: Your terminal package offers a download option that must be activated in order to initiate the download. For demonstration purposes, the procedure for downloading with RUN Term 64/128 (found on the RUN Works disk) entails pressing ALT/D (Commodore/D for the 64 version), followed by a 2 to select X-modem download, entering a filename, and finally specifying the filetype—program or sequential. Just be sure you have enough free disk space to capture the whole file. ►

New, exciting creative software from the company that brought you the world famous, best selling "Pocket™ Writer".

Pocket™ Author breaks new barriers. Now you can create your own software applications without an in-depth knowledge of programming.

With Pocket™ Author you can:

- create your own applications with pull down menus, screen management and mouse or joystick control.
- design pop-up menus with as many as eight overlays.
- move an arrow to select an "icon" or image area to be filled with text or pictures.
- "multi-task" sound and animation.
- draw or paint images.
- use the many, many other excellent features.

With Pocket™ Author, you can create games, question and answer programmes, business and educational applications, animation sequences, music, and almost anything you can imagine. The manual contains a tutorial to get you started. There are over 20 help screens summarizing how to use Pocket™ Author. Also included are examples and utilities to facilitate making your own icons and help screens.

Don't wait! Order Pocket™ Author today! You can get the newest breed of "Creativity Software" only from Digital Solutions. Send in the Order Form below or call 416-731-8775 [credit cards orders only].

Regular price is \$59.95 U.S. [\$69.95 Cdn.]

But, our Special Introductory price is only \$39.95 U.S. [\$49.95 Cdn.] and We pay all shipping and handling charges.

Ontario residents add 8% Provincial Sales Tax of \$4.00 [Total of \$53.95]

Please send me Pocket™ Author

Name _____
 Address _____ City _____
 State/Prov. _____ Postal code _____
☐ Payment enclosed ☐ Amex ☐ Visa ☐ MasterCard
 Acct# _____ Exp. ____/____
 Signature _____

Credit card orders must be signed.

Send to: Digital Solutions Inc., P.O. Box 345, Station A,
 Willowdale, Ontario, Canada M2N 5S9

Circle 46 on Reader Service card.

MAGIC

This process varies from one terminal package to another, but is rarely more complicated than the above procedure. Familiarize yourself with your terminal program's documentation, and you'll be surprised at the ease with which programs and files can be downloaded. You'll find that many of the RUNning Board programs are worth the long distance phone bill you'll get at the end of the month!

—TIM WALSH, MAGIC COLUMNIST

\$51F C-128 DARTBOARD

If you have a C-128 or C-128D and a 1700 or 1750 RAM Expander, don't waste another minute! Type in C-128 Dartboard for an amazing 40-Column-mode animation demonstration. To gain control of the action, pressing + slows down the animation and — speeds it up. Finally, pressing E stops the program.

```

0 REM C-128 DARTBOARD WITH RAM EXPANDER -
  DAVID L. HARP :REM*161
10 FAST:GRAPHIC3,1:B=0:BK=0:S=1 :REM*24
20 COLOR1,2:COLOR2,7:COLOR3,3:COLOR0,15 :REM*35
30 C1=65:C2=45:N=1 :REM*114
40 FORA=40TO80STEP20:CIRCLE,80,100,A,A:NEX
  T :REM*226
50 FORA=0TO360STEP30:DRAW,80,100TO80;A:NEX
  T:IFN=3THEN70 :REM*112
60 FORA=15TO360STEP60:CIRCLE2,80,100,C2,C2
  ,A,A+1:PAINT2,+2,+1,1:NEXT:IFN=4THEN80
  :REM*126
70 FORA=45TO405STEP60:CIRCLE3,80,100,C1,C1
  ,A,A+1:PAINT3,+2,+1,1:NEXT :REM*114
80 SLOW:STASH8192,8192,B,0:FAST :REM*9
90 B=B+8192 :REM*193
100 IFN=1THENGGRAPHIC3,1:C1=45:C2=65:N=N+1:
  GOTO40 :REM*3
110 IFN=2ORN=3THENGGRAPHIC3,1:C1=35:C2=35:N
  =N+1:GOTO40 :REM*49
120 GRAPHIC3,1:SLOW :REM*47
130 B=0:BK=0:FORA=1TO4 :REM*239
140 FETCH8192,8192,B,0 :REM*41
150 B=B+8192:IFB=8192*4THENB=0 :REM*88
160 GETA$ :REM*45
170 IFCHR$(43)=A$THENS=S+2 :REM*59
180 IFCHR$(45)=A$THENS=S-2:IFS<1THENS=1
  :REM*27
190 FORZ=0TOS:NEXT:IFA$="E"THEN210:REM*213
200 NEXT:GOTO130 :REM*58
210 GRAPHIC0 :REM*18

```

—DAVID L. HARP, NORWALK, OH

\$520 SLICK 64/128 SLIDER

Sliding message routines seem to be the most popular programs written for the C-64 and C-128, since there are so many of them. My contribution is an efficient catch-all sliding routine that works for the C-64 and the C-128 in both 40- and 80-Column modes. Hopefully, Slick 64/128 Slider will provide RUN readers with the ultimate sliding message maker.

```

0 REM SLICK 64/128 SLIDER - JAMES WALKER
  :REM*73

```

```

10 PRINTCHR$(147):FORI=1TO20 :REM*248
20 IF PEEK(65533) >253 THEN 40 :REM*94
30 D=211:GOTO50:REM C-64 :REM*126
40 D=236:REM C-128 :REM*241
50 POKE D,I:FORS=1TO35:NEXT :REM*247
60 PRINT"{CRSR UP} {CTRL 8}HERE IT COMES..
  . " :REM*64
70 NEXT :REM*200
80 FORI=20TO1 STEP-1:FORS=1TO35:NEXT
  :REM*148
90 POKE D,I :REM*34
100 PRINT"{CRSR UP} {CTRL 2}THERE IT GOES.
  .. " :REM*29
110 NEXT :REM*240

```

—JAMES K. WALKER, LYNCHBURG, VA

\$521 PACMAN'S REVENGE

Over the years, long-time computerists have developed mixed feelings towards the original Pacman character, a glutton who devoured other screen characters. Largely unseen for years, he recently resurfaced in Pacman's Revenge, a C-64/C-128 program that has the old villain back doing what he does best—devouring hapless souls.

```

0 REM PACMAN'S REVENGE - MIKE DISMUKE
  :REM*174
10 PRINTCHR$(147):POKE 53280,0:POKE 53281,
  0:M=1:D=1:F=18:G=50 :REM*179
20 A1$=CD$(0)+"{HOME}{13 CRSR DNs}":A2$=A1
  $+"{CRSR DN}" :REM*0
30 IF M=7 THEN GOTO 90 :REM*176
40 M=M+1:E=INT(RND(500)*2000)+1 :REM*26
50 PRINTA1$TAB(F+1)"{2 SHFT Qs}":FORA=1TOG
  *2:NEXT :REM*52
60 PRINTA2$TAB(F)"{SHFT J}{2 SHFT Cs}{SHFT
  K}":FORA=1TOG*2:NEXT :REM*20
70 PRINTA1$TAB(F+1)"{2 SHFT Ws}":FORA=1TOE
  :NEXT :REM*134
80 PRINTA2$TAB(F)"{SHFT J}{CTRL 9}{COMD U}
  {CTRL 0}{SHFT C}{SHFT K}":FORA=1TOG*2:N
  EXT:GOTO30 :REM*77
90 P=INT(RND(1)*15)+1:POKE646,P :REM*215
100 D=D+1:IF D=21 THEN GOTO 150 :REM*142
110 PRINTA1$TAB(D)"{SHFT W}{SHFT N}"
  :REM*169
120 PRINTA2$TAB(D)" {SHFT M} " :FORA=1TOG:N
  EXT :REM*169
130 PRINTA1$TAB(D)" {SHFT W}" :REM*166
140 PRINTA2$TAB(D)" {2 COMD Ys}":FORA=1TOG
  :NEXT:GOTO 100 :REM*87
150 FORA=1TOG*9:NEXT:GOTO 0 :REM*103

```

—MIKE DISMUKE, BOONE, CO

\$522 64/128 DIRECTORY ARRAY

Using Basic, even compiled Basic, to read a disk directory into an array is painfully slow. The following program, 64/128 Directory Array, does the job much faster. It works with the 1541, 1571 and 1581 disk drives in both 64 and 128 modes, is relocatable, and selectively reads program files exclusively, sequential files exclusively, both program and

MAGIC

sequential files or all file types.

The two 80s in line 170 cause only program files to be read. Change either one of the 80s to 83 for reading both program and sequential files, or change both 80s to 83 for sequential files only. Change the two 80s to 82 and 69, respectively, for all file types. The first eight lines show how to use the routine.

```

Ø REM 64/128 DIRECTORY INTO ARRAY - R. ERI
C LEE :REM*2Ø7
1Ø DIMN$(288),E$(288):DN=8:IFFRE(Ø)=FRE(1)
THEN3Ø:REM DN IS DRIVE # :REM*73
2Ø Y=235:X=236:NC=2Ø8:B=842:IT=2816:GOTO4Ø
:REM*127
3Ø POKE5328Ø,Ø:POKE53281,Ø:Y=214:X=211:NC=
198:B=631:IT=828 :REM*1
4Ø PRINTCHR$(147)CHR$(153):GOSUB9Ø:OPEN1,D
N,Ø,"$Ø":OPEN3,Ø:J=1:SYS IT+4 :REM*117
5Ø POKEB,13:POKENC,1:INPUT#3,N$(J) :REM*12
6Ø E$(J)=PEEK(252):J=J+1:SYS IT:IFPEEK(254
)THEN5Ø :REM*48
7Ø CLOSE1:CLOSE3:PRINTCHR$(147):FS=J-1:FOR
I=1TOFS:PRINTE$(I),N$(I):NEXT :REM*137
8Ø PRINT FS"FILES":BF=PEEK(251)*256+PEEK(2
52):PRINTBF"BLOCKS FREE":END :REM*233
9Ø FOR I=IT TO IT+171:READ A:POKE I,A:NEXT
:RETURN :REM*96
1ØØ DATA 169,Ø,24Ø,97,32,2Ø4,255,162,1,134
,254,32,198,255,32,228,255,32 :REM*68
11Ø DATA 228,255,32,183,255,2Ø8,116,16Ø,29
,32,228,255,136,2Ø8,25Ø,24Ø,71:REM*16Ø
12Ø DATA 24,16Ø,13,162,12,32,24Ø,255,169,1
6Ø,32,21Ø,255,169,32,16Ø,15,32:REM*114
13Ø DATA 21Ø,255,136,2Ø8,25Ø,24,16Ø,13,162
,12,32,24Ø,255,32,228,255,2Ø1 :REM*89
14Ø DATA 13,24Ø,77,2Ø1,34,2Ø8,245,16Ø,Ø,32
,228,255,133,253,32,21Ø,255,32:REM*216
15Ø DATA 228,255,2Ø1,34,24Ø,12,32,21Ø,255,
169,Ø,24Ø,242,162,1,32,198,255:REM*117
16Ø DATA 32,228,255,24Ø,1Ø,2Ø1 :REM*221
17Ø DATA 8Ø,24Ø,43,2Ø1,8Ø:REM READ INSTRU
CTIONS FOR ALTERING LINE 17Ø :REM*58
18Ø DATA 24Ø,39,2Ø8,241,32,228,255,32,228,
255,32 :REM*4Ø
19Ø DATA 228,255,133,252,32,228,255,133,25
1,169,Ø,24Ø,15Ø,169,1,32,195 :REM*239
2ØØ DATA 255,169,Ø,24Ø,8,169,Ø,133,254,169
,Ø,24Ø,239,32,2Ø4,255,24,16Ø :REM*238
21Ø DATA 13,162,12,32,24Ø,255,165,253,96
:REM*123

```

—R. ERIC LEE, LOMPOC, CA ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

THE ULTIMATE Word Processor from Digital Solutions

Here it is ...the ultimate in power ...the ultimate in ease of use...the ultimate in speed for your Commodore 64 & 128. All of the on-screen features that made Pocket Writer a 500,000 seller, plus these new exciting additions:

- Multiple columns. Print up to 4 newspaper-style columns.
- Macro capability. Record and invoke.
- Undo. To cancel last command.
- Markers. Mark up to 10 locations in one text.
- Book paging, odd-even and left/right.
- Line and box drawing modes.
- Word, sentence and paragraph count.
- Find/replace in either direction.
- Cursor movement by sentence and paragraph.

Plus all the features you've become accustomed to:

- No complicated format commands embedded in text.
- Reads files generated by Pocket Filer 2 and Pocket Planner 2.
- On-screen text formatting and wordwrap. What you see is what you get!



Pocket Writer™ 3

Professional Word Processor
for the Commodore 128 and 64

- Automatic configuration for screen color, format and printer selection.
- Spelling Checker incorporated into both 64 & 128 programs. (Original Pocket Dictionary compatible)

Special Offer!

If you order your Pocket Writer™ 3 Program from Digital Solutions Inc. before January 31, 1989, you will receive a Free Pocket Writer™ Template Disk (retail value 24.95 U.S. (29.95 Can.))

Don't wait! Order today! You can get the Ultimate Word Processor from Digital Solutions. Send in the Order Form or call 416-731-8878 or Fax 416-731-8915 (credit cards orders only) Price is \$69.95 U.S. (\$79.95 Can.) We pay all shipping and handling charges. Ontario residents add 8% Provincial Sales Tax of \$6.40 (Total \$86.35)

Please check the version you require 64 ☐ 128 ☐
 Name _____
 Address _____ City _____
 State/Prov. _____ Postal Code _____
 Payment enclosed ☐ Amex ☐ Visa ☐ Mastercard
 Acct. _____ Exp. _____
 Signature _____
Credit card orders must be signed.



**Digital
Solutions
Inc.**

P.O. Box 345,
Station A,
Willowdale, Ontario,
Canada M2N 5S9
Phone: 416-731-8878
Fax: 416-731-8915

Circle 97 on Reader Service card.

■ MS-DOS/Commodore Connection Continues

■ New Life for GEOS 128 Users

RUN

THE **COMMODORE** 64/128 USER'S GUIDE

May 1989
An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

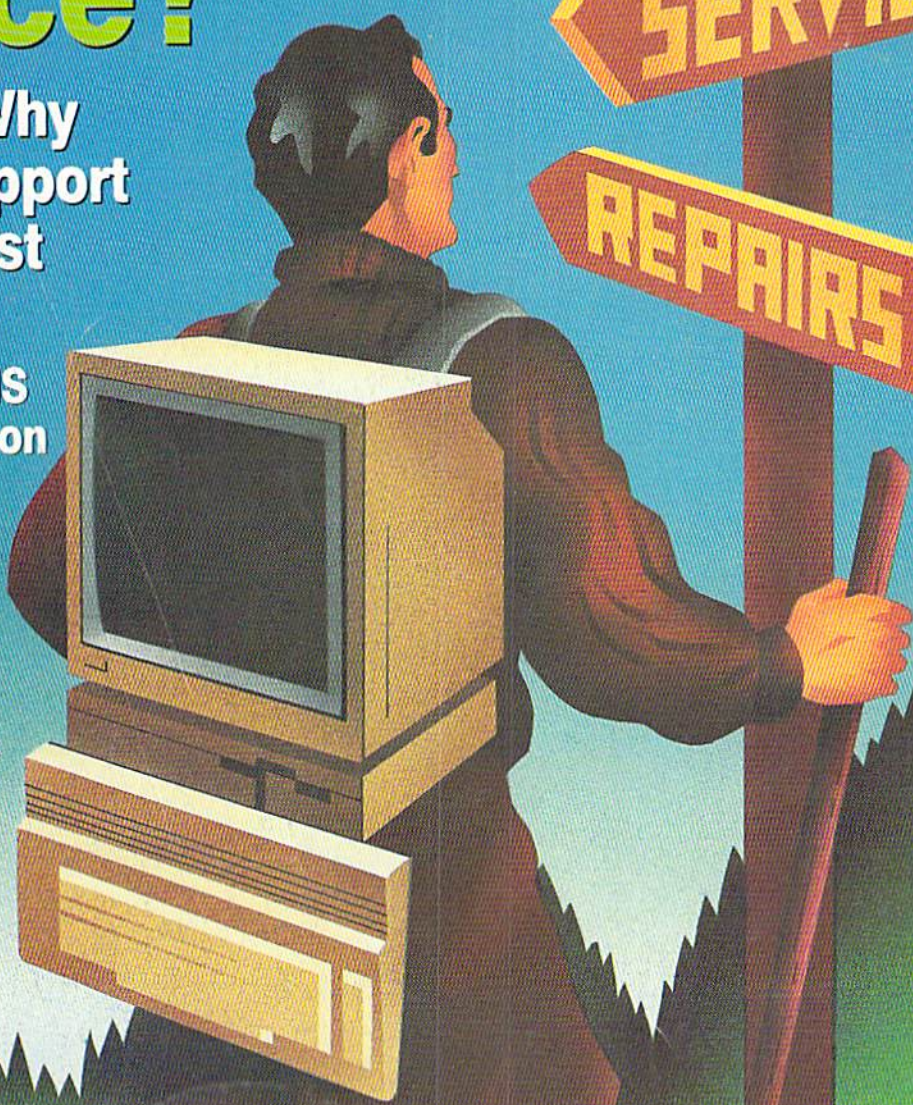
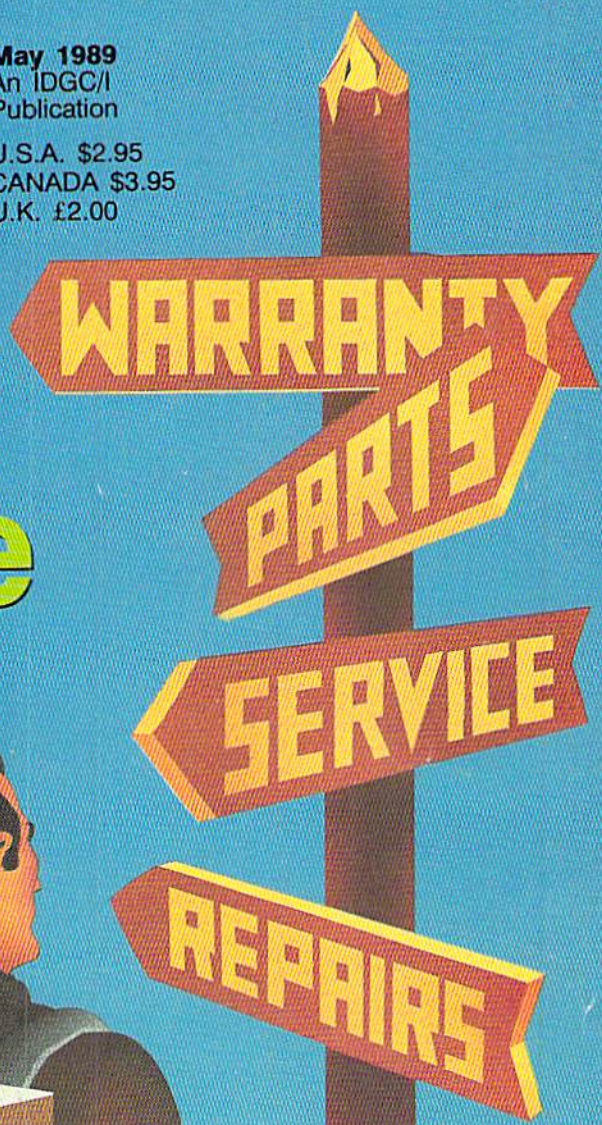
Where's the Service?

Answers to Why
Customer Support
Problems Exist

PERFECT TYPE-INS
In One Easy Lesson

Plus:

- 128 Solitaire
Extraordinaire
- C-64 Strategy &
Math Games



MAGIC

Listings that look like MS-DOS output, file copying on the 1581 and disabling list-protection make May Magic memorable.

Compiled by TIM WALSH

\$523 A-Z INDEX TABS

I have found that by sticking index tabs to pages in a spiral notebook, I can keep pages alphabetized and organized and can then easily find what I need at a glance. To make the tabs, I use A-Z Index Tabs, a program for the C-64 or C-128. It prints four tabs per one standard 1/16th-inch mailing label. The program will print 26 tabs, labeled A through Z, on seven mailing labels. You can then cut out the tabs from the labels.

While the program is designed to work as is on the Commodore MPS-1000 printer, you may have to adjust the line spacing prior to running the program to get it to work with other printers. The command for setting the line spacing in increments of 1/72nd of an inch is as follows:

```
OPEN4,4:PRINT#4,CHR$(27)CHR$(65)CHR$(n):CLOSE4
```

In the above example, "n" may range from 1 (1/72nd of an inch) through 72 (1 inch). It'll work nicely with a variety of printers if the line spacing is set to 1/72nds or 1/24nds of an inch.

```
Ø REM A-Z INDEX TABS - JEROME REUTER
```

```
Ø REM*85
1Ø REM FOR 15/16 LABELS ON AN MPS-1ØØØ PRI
  NTER:REM*2Ø2
2Ø OPEN6,4,6:PRINT#6,CHR$(18):CLOSE6:OPEN4
  ,4:FORJ=65TO9ØSTEP2:REM*235
3Ø PRINT#4,"(SHFT U){5 SHFT *s}{CMD R}{5
  SHFT *s}{SHFT I}{SHFT U}{5 SHFT *s}{CO
  MD R}{5 SHFT *s}{SHFT I}":GOSUB7Ø
  :REM*66
4Ø PRINT#4,"(SHFT -){4 SPACES}"+CHR$(J)+"{
  SHFT -}"+CHR$(J)+"{4 SPACES}{SHFT -}";
  :REM*165
5Ø PRINT#4,"(SHFT -){4 SPACES}"+CHR$(J+1)
  +"(SHFT -}"+CHR$(J+1)+"{4 SPACES}{SHFT
  -}":GOSUB7Ø:REM*254
6Ø PRINT#4,"(SHFT J){5 SHFT *s}{CMD E}{5
  SHFT *s}{SHFT K}{SHFT J}{5 SHFT *s}{CO
  MD E}{5 SHFT *s}{SHFT K}":PRINT#4:NEXT:
  CLOSE4:END:REM*39
7Ø PRINT#4,"(SHFT -){5 SPACES}{SHFT -}{5 S
  PACES}{SHFT -}{SHFT -}{5 SPACES}{SHFT
  -}{5 SPACES}{SHFT -}":RETURN:REM*2Ø1
```

—JEROME E. REUTER, MONCKS CORNER, SC

\$524 MAGIC CAPPER 128

Magic Capper 128 gives the listings of 80-Column mode program listings a more professional appearance by printing anything outside of double quotation marks in Uppercase/



Graphics mode and everything within in Upper-/Lowercase mode, such as: 10 PRINT"Hello". This makes Basic programs look like programs written on MS-DOS computers, where keywords must be typed in capital letters. You'll find the 80-column screen slowed, because Magic Capper uses the Basic Auto-Insert mode (ESC A).

Activate the program with the F2 key and deactivate it with F4. The SYS2816,1 and SYS2816,0 commands also turn Magic Capper on and off.

```
Ø REM C-128 MAGIC CAPPER - JIM DERRY
```

```
Ø REM*221
1Ø FAST:FORX=2816TO2882:READQ$:POKEQ,DEC(Q
  $):NEXTX:REM*1Ø9
2Ø PRINT"{3 CRSR DNs}SYS 2816,1 TO ACTIVAT
  E (OR {SHFT F}2)":PRINT"SYS 2816,Ø TO D
  ISACTIVATE (OR {SHFT F}4)":PRINT"{CRSR
  DN}8Ø COLUMNS ONLY!"+CHR$(27)+"A":SYS28
  16,1:REM*132
3Ø KEY2,"SYS2816,1"+CHR$(13)+CHR$(27)+CHR$
  (A):KEY4,"SYS2816,Ø"+CHR$(13)+CHR$(27)+
  "C":REM*241
4Ø DATA C9,ØØ,FØ,ØD,78,A9,1E,8D,14,Ø3,A9,Ø
  B,8D,15,Ø3,58,6Ø,78,A9,65,8D,14,Ø3,A9,F
  A,8D,15,Ø3,58,6Ø,Ø8,48,8A,48,98,48,A9,Ø
  Ø,8D,ØØ:REM*177
5Ø DATA FF,A5,F4,DØ,ØA,A5,F5,DØ,Ø6,2Ø,92,C
  8,4C,3A,ØB,2Ø,8Ø,C8,68,A8,68,AA,68,28,4
  C,65,FA:REM*47
```

—JIM DERRY, EAST DETROIT, MI

\$525 POKE MAKER 64

Poke Maker prompts for memory locations and the contents you wish to insert, then writes a file to disk that performs the poking. For example, for a white screen and red border, you'd enter 53280 at the first prompt and 3 at the second, then 53281 at the third and 2 at the fourth. Poke Maker 64 then prompts you to save the file to disk. Entering LOAD"POKER.680",8,1 followed by SYS680 instantly displays that combination of colors! ▶

MAGIC

At present, Poke Maker is limited to 19 Pokes at location 680, but if you locate it at 49152, you can make a file named POKER.49152 that could contain up to 1300 Pokes!

```

0 REM 64 ML POKE MAKER - ELAINE FOSTER
                                :REM*141
10 DM=19:DIMAD(DM),CO(DM):REM - 19 POKES M
  AXIMUM                        :REM*110
20 INPUT"(SHFT CLR)LOCATION OF POKE MAKER
  680{5 CRSR LFs}";BA:PRINT    :REM*73
30 PRINT"{2 SPACES}ENTER 0 TO EXIT":INPUT"
  ADDRESS TO POKE";AD(N):IFAD(N)=0THEN60
                                :REM*186
40 PRINT"CONTENT OF"AD(N);:INPUTCO(N):IFCO
  (N)=0THEN60                  :REM*183
50 N=N+1:GOTO30                :REM*192
60 DEFFNHI(X)=INT(X/256):DEFFNLO(X)=X-256*
  INT(X/256):B=BA+31:NU=3*N    :REM*67
70 POKEB-1,NU:FORM=BTOB+NU-1STEP3:POKEM,FN
  LO(AD(NN)):POKEM+1,FNHI(AD(NN)):REM*38
80 POKEM+2,CO(NN):NN=NN+1:NEXT:POKEM,0
                                :REM*161
90 FORN=BATOB+29:READY:POKEN,Y:NEXT
                                :REM*18
100 X=5:Y=31:GOSUB190:X=13:GOSUB190:X=19:G
  OSUB190:X=25:Y=30:GOSUB190  :REM*228
110 DATA160,000,162,000,185,199,002,240,02
  0,133                        :REM*132
120 DATA251,200,185,199,002,133,252,200,18
  5,199                        :REM*242
130 DATA002,129,251,200,204,198,002,208,23
  1,096                        :REM*186
140 PRINT"(CRSR DN)OK.{2 CRSR DNs}":PRINT"
  SAVE THIS PROG TO DISK? ";:WAIT198,1:G
  ETDI$:PRINTDI$              :REM*62
150 IFDI$<>"Y"THENEND          :REM*188
160 OPEN1,8,1,"POKER."+MID$(STR$(BA),2)
                                :REM*215
170 PRINT#1,CHR$(FNLO(BA));CHR$(FNHI(BA));
                                :REM*32
180 FORP=BATOM:PRINT#1,CHR$(PEEK(P));:NEXT
  :PRINT#1:CLOSE1:END         :REM*92
190 POKEBA+X,FNLO(BA+Y):POKEBA+X+1,FNHI(BA
  +Y):RETURN                  :REM*163

```

—ELAINE FOSTER, LAUNCESTON, AUSTRALIA

\$526 C-64 LIST-PROTECTION DISABLE

Trying to list a list-protected C-64 program written in Basic can be a pain, because you have to remove all those shifted Ls, embedded deletes and other control characters.

C-64 List-Protection Disable deactivates all list protection on programs to make them easy to list for viewing. Just load and run it, then load in the program that's list-protected and it will list properly.

```

0 REM 64 LIST PROTECTION DISABLE - RICHARD
  PENN                        :REM*140
10 FORI= 679 TO 713:READ A:POKE I,A:CK=CK
  +A:NEXT                     :REM*169
20 IF CK<> 3809 THENPRINT"ERROR IN DATA ST
  ATEMENTS":END              :REM*153

```

```

30 POKE 774,167:POKE 775,2    :REM*168
40 DATA 8,72,72,169,1,133,216,104,201,204,
  208,4,169,128,133,15,201,141 :REM*143
50 DATA 208,4,169,0,133,15,104,201,13,208,
  2,169,95,40,76,26,167       :REM*170

```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$527 1581 FILE COPYING

Many readers have asked me for a source of good Commodore 1581 disk drive file copiers, which are not plentiful, but are in demand. Two programs I highly recommend are Uni-Copy, which is on the 1581 Test Demo disk, and RUN Shell, to be found on RUN's own RUN Works disk.

Uni-Copy, written by Jim Butterfield, is a versatile program that copies to and from the 1581 with no problem. RUN Shell, for both 64 and 128 modes, not only copies files to and from the 1581, but also performs 1581 disk-maintenance functions, such as formatting. Thousands of 1581 owners who have purchased RUN Works seem happy with the way RUN Shell works with their drives.

—TIM WALSH, MAGIC COLUMNIST

\$528 40-COLUMN 128 CUSTOM CHARACTERS

Defining fonts on the C-128 in 40-Column mode is a slow process. My short machine language routine, 40-Column Characters, can define 255 characters (in 40-Column mode only) in less than 40 seconds. Space limitations for the Magic column permit us to redefine only a few keys—@, A, B and C—so change the value of CN for each character you want to re-define.

```

0 REM DEFINING 40-COL. C-128 CHARACTERS -
  GABRIEL NARRO              :REM*154
10 FORI=5376 TO 5438:READ A:POKE I,A:NEXT
                                :REM*156
20 DATA 169,208,133,137,169,32,133,139,169
  ,0,133,136,133,138,162,0,160,0,177,136,
  145                          :REM*206
30 DATA138,200,192,255,208,247,232,224,16,
  240,29,24,165,136,105,255,133,136,165,1
  37,105,0,133,137,24,165,138,105,255,133
  ,138,165,139,105,0,133,139,76,16,21,96,
  0                             :REM*121
40 REM DEFINE @, A, B, C      :REM*91
50 CN=4:CS=8192:CD=8*CN:BANK14:SYS 5376:PO
  KE 2604,24                  :REM*114
60 FOR R= 0 TO CD-1:I=CS+R:READ X:POKE I,X
  :NEXT                      :REM*83
70 DATA 62,34,42,46,96,98,126,0,62,34,34,1
  26,98,98,98,0,120,68,68,124,102,102,126
  ,0,126,66,64,96,96,98,126,0 :REM*155
80 PRINT" @ A B C"          :REM*219

```

—GABRIEL NARRO, MEXICO CITY, MEXICO

\$529 ATTENTION-GETTING EXITS

Select the option to quit on most C-64 programs, and you get little more than the Ready prompt and a flashing cursor. Make your program stand out from run-of-the-mill exits with Ground Zero 64, a short exit routine that rapidly draws

MAGIC

an exciting and attractive closing screen. Change the SYS 64738 to SYS 2048 if you do not want to erase the program in memory.

```
0 REM GROUND ZERO 64 - MIKE PURCELL
                                :REM*139
10 POKE 53280,6:POKE 53281,14:POKE646,6
                                :REM*200
20 PRINTCHR$(147): FORT=2024TO1024STEP-6:P
   OKE T,224:NEXT:SYS 64738
                                :REM*50
                                —MIKE PURCELL, FPO, NY
```

\$52A C-64 POP-ON SCREENS

Video displays that "pop" into view are more appealing than those that are displayed as they're being created. Unfortunately, Basic's Print command is slow and doesn't lend itself to speed. 64 Screen Pop-On adds a professional touch to your C-64 programs by creating screens that pop into view ready-made.

Set the C-64 border and screen to the same color, then enter Poke 53265,11. Anything printed to the screen from that point on will be invisible. To pop the screen into view, enter Poke 53265,27. My program demonstrates this technique, then displays the traditional technique for comparison.

```
0 REM C-64 SCREEN POP-ON DEMO - RICHARD PENN
                                :REM*15
10 POKE 53280,0:POKE 53281,0:POKE 53265,11
                                :REM*209
20 PRINTCHR$(147)CHR$(5);:REM CLEAR SCREEN
                                :REM*68
30 FORT=1 TO 23:PRINTTAB(T+5)CHR$(18)"{7 SPACES}"
                                :REM*230
40 PRINTTAB(29-T)CHR$(18)CHR$(145)"{7 SPACES}":NEXT
                                :REM*179
50 PRINTTAB(15)CHR$(159)"HIT ANY KEY";
                                :REM*211
60 POKE 53265,27:Z=Z+1:IFZ<2THENWAIT198,1:
   GETA$:PRINTCHR$(147)CHR$(28);:GOTO30
                                :REM*29
70 WAIT 198,1:GETA$:PRINTCHR$(147):REM*130
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$52B VERTICAL SCROLLER 64

Vertical Scroller 64 allows everything from single characters to entire screens to scroll vertically on the C-64. After loading and running the program, activate it with SYS 52000,SC,LN,DR, where SC is the first screen line (1024-1063) to be scrolled, LN is the number of lines (1-40) from the first to scroll, and DR is the direction, with 0 for up and 1 for down.

For truly amazing effects, combine Vertical Scroller 64 with my 64 High-Speed Scroll (Magic \$477, March 1988).

```
0 REM VERTICAL SCROLLER - BRET M. TIMMINS
                                :REM*79
10 FOR T=52000 TO 52188:READA:POKE T,A:C=C
   +A:NEXT
                                :REM*115
20 IF C<>23155THENPRINT"ERROR IN DATA STATEMENTS":END
                                :REM*226
30 PRINT"FORMAT: SYS 52000,SC,LN,DR"
                                :REM*61
```

```
40 DATA 32,253,174,32,235,183,134,253,32,2
   07,203,32,253,174,32,158,183 :REM*133
50 DATA 138,208,70,160,0,162,24,177,20,72,
   177,251,72,160,40,177,20,72,177 :REM*27
60 DATA 251,160,0,145,251,104,145,20,24,16
   5,20,105,40,133,20,144,2,230,21:REM*123
70 DATA 32,207,203,202,208,225,104,145,251
   ,104,145,20,198,253,240,18,56 :REM*61
80 DATA 165,20,233,191,133,20,165,21,233,3
   ,133,21,32,207,203,80,187,96,24 :REM*74
90 DATA 165,20,105,152,133,20,165,21,105,3
   ,133,21,32,207,203,160,40,162 :REM*102
100 DATA 24,177,20,72,177,251,72,160,0,177
   ,20,72,177,251,160,40,145,251 :REM*244
110 DATA 104,145,20,56,165,20,233,40,133,2
   0,176,2,198,21,32,207,203,202 :REM*9
120 DATA 208,225,104,145,251,104,145,20,19
   8,253,240,188,24,165,20,105,193:REM*85
130 DATA 133,20,165,21,105,3,133,21,32,207
   ,203,80,187,24,165,20,105,0,133:REM*24
140 DATA 251,165,21,105,212,133,252,96
                                :REM*156
```

```
0 REM VERTICAL SCROLL DEMO
                                :REM*208
10 POKE 53281,0:POKE 53280,0
                                :REM*113
20 A$="VERTICAL SCROLLER"
                                :REM*46
30 PRINTCHR$(147)"{11 CRSR DNs}"
                                :REM*244
40 PRINT"{CTRL 3}{9 SPACES}";A$
                                :REM*73
50 FORT=0TO500:NEXT
                                :REM*131
60 FORT=0TO24:SYS52000,1033,LEN(A$),1:NEXT
                                :REM*131
70 R1=INT(RND(0)*LEN(A$)):R2=INT(RND(0)*LE
   N(A$)):IFR1=R2THEN70
                                :REM*67
80 FORT=0 TO 24
                                :REM*17
90 SYS 52000,1024+9+R1,1,0:SYS 52000,1024+
   9+R2,1,1
                                :REM*20
100 NEXT:GOTO70
                                :REM*197
```

—BRET M. TIMMINS, SANDY, UT

\$52C C-128 DOS SHELL COPYING—AGAIN

Magic Trick \$507 (February 1989) is a good way to copy Commodore's 128 DOS Shell from the 1571 Test/Demo disk, but there's an easier way. Boot up C-128 DOS Shell and, with the Test/Demo disk still in the drive, select Disk Copy from the menu and press the space bar. After you've copied the entire 1571 Test/Demo disk to another drive, you will have a perfect working copy of DOS Shell on the copy disk. What could be easier?

—KEITH SILLS, REGO PARK, NY ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

■ Test Your Cultural Literacy. See p. 4.

RUN

THE **COMMODORE** 64/128 USER'S GUIDE

June 1989

An IDGC/I
Publication

U.S.A. \$2.95

CANADA \$3.95

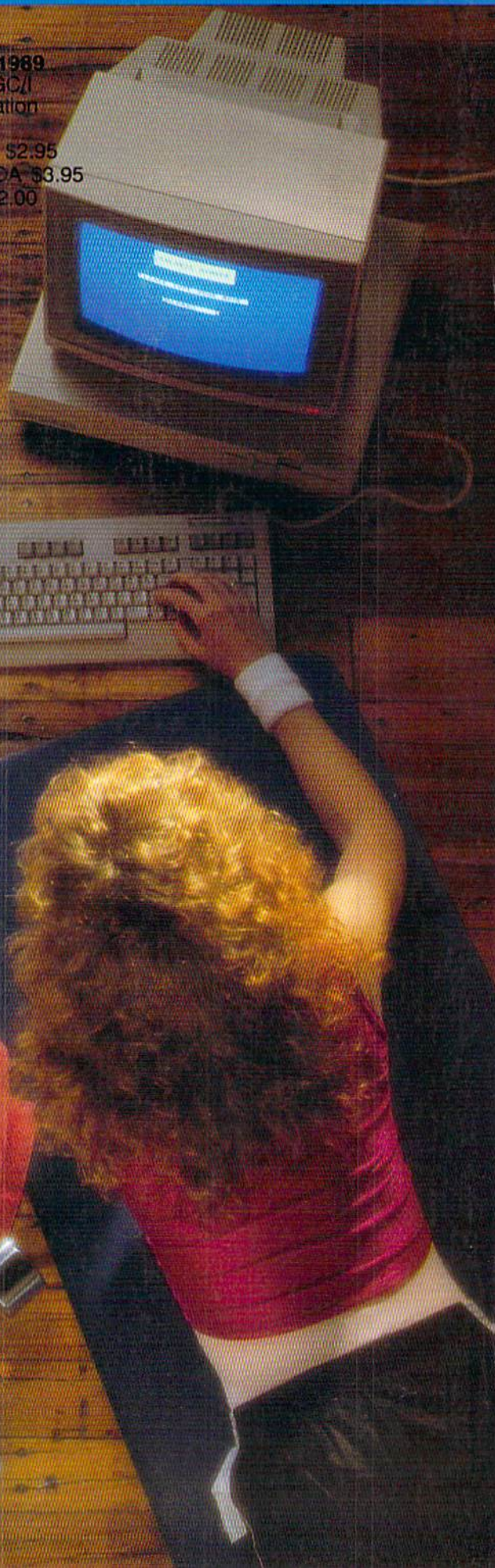
U.K. £2.00

Stay in Shape With Calorie Counter

Easy-to-Use
C-128 Quick Writer

C-64 Arcade Game
Teaches Typing

MS-DOS/C-64
Connection
Part 3



MAGIC

Use a space checker and your C-128's keypad to help type in hex loader programs, such as *RUN Paint*; keep your power supply cool.

Compiled by TIM WALSH

\$52D RECTANGLES FOR YOUR COMMODORE

Rectangles 64/128 draws rectangles in both 64 and 128 40-Column modes. The subroutine in lines 60-100 makes the rectangles. To use the routine in your program, set variable SC to a screen location corresponding to the top-left corner of your rectangle. Variables HT and WT determine the height and width of the rectangle, CL represents the color and CH is the character that draws the rectangle.

```
0 REM RECTANGLES 64/128 - BRET M. TIMMINS :REM*174
10 POKE 53280,0:POKE 53281,0:PRINTCHR$(147 :REM*252
) :REM*252
20 FOR CL= 1 TO 15:WT=1:SC=1024+(12*40)+19 :REM*49
:CH=160:FORHT=1 TO 24 STEP4 :REM*49
30 GOSUB 60 :REM*166
40 WT=WT+4:SC=SC-2*41:NEXT:NEXT :REM*31
50 GOTO 10 :REM*172
60 FOR LX=SC TO SC+WT:POKE LX,CH:POKE LX+5 :REM*211
4272,CL:NEXT :REM*211
70 FOR LX=SC+HT*40 TO SC+HT*40+WT:POKE LX, :REM*95
CH:POKE LX+54272,CL:NEXT :REM*95
80 FOR LX=SC TO SC+HT*40STEP40:POKE LX,CH: :REM*78
POKE LX+54272,CL:NEXT :REM*78
90 FOR LX=SC+WT TO SC+WT+HT*40STEP40:POKE :REM*251
LX,CH:POKE LX+54272,CL:NEXT :REM*251
100 RETURN :REM*242
```

—BRET M. TIMMINS, DRAPER, UT

\$52E NEW CHARACTERS FOR 80-COLUMNS

This short program puts a custom character set in the C-128's 80-Column mode. Run the program, then enter this statement:

```
GRAPHIC 1<return>
BLOAD"SAMPLE FONT",P8192<return>
BOOT"BOOT 80"<return>
```

or
BLOAD"BOOT 80":SYS2816<return>

Use your own C-64 or C-128 font file to replace "Sample Font" in the BLOAD command. The Boot 80 Character program, shown below, makes the Boot 80 program, which installs the character set.

```
0 REM BOOT 80-COLUMN CHARACTERS - JIM DERR :REM*105
Y :REM*105
10 FORX=2816TO2879:READQ$:POKEX,DEC(Q$):NE :REM*253
XT:BSAVE"BOOT 80",B0,P2816TOP2880 :REM*253
20 DATA A9,00,A0,20,85,DA,84,DB,A2,12,A9,2
```

```
0,20,CC,CD,E8,A9,00,20,CC,CD,A0,00,A2,0 :REM*98
E,A9,DA,20,74,FF,20,CA :REM*98
30 DATA CD,C8,C0,08,90,F1,A9,00,20,CA,CD,8 :REM*44
8,D0,FA,18,A5,DA,69,08,85,DA,90,E0,E6,D :REM*44
B,A5,DB,C9,30,90,D8,60 :REM*44
```

—JIM DERRY, EAST DETROIT, MI

\$52F BLISS-FUL RUN PAINT SPACE FINDER

After I typed in the seemingly interminable listings for *RUN Paint* (*RUN*, March 1989), the program refused to work when I ran it. I found the cause: spaces I'd neglected to enter properly in the Data statements.

Since *RUN*'s Checksum doesn't check for spaces except for those between quotation marks, I've written an enhancement that you can put in any *RUN* listing that uses the hex loader format. Just add this routine to the hex loader and run it. Any lines where you've mistyped spaces print to the screen for you to fix. Delete lines 1, 2 and 1000-1060 when you've finished typing in the listing.

```
1 GOSUB 1000{23 SPACES}:REM*51 :REM*129
2 PRINT"DELETE LINES 1 & 2, AND LINES 1000 :REM*111
-1060 :REM*111
1000 PRINT"{SHFT CLR}CHECKING FOR MISSING :REM*85
SPACES... :REM*85
1010 FOR Q= 101 TO (N): REM N = LAST FULL :REM*181
(60-CHAR) LINE NUMBER :REM*181
1020 READ A$: B$=MID$(A$,1) :REM*237
1030 IF LEN(B$)<62 THEN 1050 :REM*235
1040 NEXT: PRINT "SPACING IS OK!":RETURN :REM*176
:REM*176
1050 PRINT"SPACING INCORRECT IN LINE ";Q :REM*71
:REM*71
1060 GOTO 1020 :REM*80
```

—PETE BLISS, MELBOURNE, FL

\$530 DON'T LET YOUR FINGERS DO TOO MUCH WALKING

The next time you type in a hex loader program, such as *RUN Paint* (*RUN*, March 1989), give your fingers a break. Use the C-128's numeric keypad to quickly and easily type in numbers, and your right hand will stay in one place on the keyboard. My program helps you further by redefining the F1, F3, F5, F7, + and - keys to type in the letters A-F, and the period key to type in spaces. It also removes the need to use the shift key for hexadecimal entries.

In addition, the F2 key places the word *DATA* and a space after a line number; F4 lists the directory; pressing F6 with the cursor in front of a filename in a directory automatically loads that program; and F8 saves a listing. ▶

MAGIC

```

10 REM 128 NUMERIC KEYPAD REDEFINED - HUGH
   MCMENAMIN :REM*87
20 KEY1,"A":KEY3,"B":KEY5,"C":KEY7,"D":KEY
   2,"DATA ":KEY4,"DIRECTORY"+CHR$(13)
   :REM*56
30 KEY6,"DLOAD(18 CRSR RTs):"+CHR$(13):KEY
   8,"DSAVE"+CHR$(34) :REM*204
40 FOR I=0 TO 88:POKE 6912+I,PEEK(64128+I):NEX
   T :REM*221
50 POKE 830,0:POKE 831,27:POKE 6994,32:POKE 69
   85,69:POKE 6986,70 :REM*183

```

—HUGH MCMENAMIN, PEORIA, IL

\$531 TWO COMPUTERS AND A TELEVISION

If you use a television as a monitor (this trick doesn't work with a computer monitor), share it with two computers at the same time. You need two RF modulators. Connect one of the modulators to the television and plug the first computer's RF cable into that modulator. Then attach the two UHF wires of the second modulator to the two screws on the bottom of the first modulator. Finally, plug the RF cable of the second computer into the second modulator. (Still with me?) The sliding switch on the first modulator toggles between computer displays, and the switch on the second modulator toggles between the second computer and the television.

—CATHERINE STEFKO, ROCHESTER, NY

\$532 LINE NUMBER ELIMINATION

If you need to take line numbers out of Basic programs, just type in one of these Pokes:

C-64: POKE 22,35
C-128: POKE 24,37

To get the line numbers back, type in one of these Pokes:

C-64: POKE 22,25
C-128: POKE 24,27

—JEFF KOESTER, WATERMAN, IL

\$533 THE UNCOMMON COMMA

With Commodore Basic and the Print statement, you can use the comma in uncommon ways. My program puts the comma to work by printing four columns of three items each. To make two columns of six items each, beginning at column 10, change line 40 of the program to:

```
40 FOR I=1 TO 12:PRINT A$(I),,NEXT
```

The comma also indents lines in printer output. Try this command on your printer:

```

10 OPEN 4,4,7
20 PRINT#4,,"THIS LINE IS INDENTED 10 SPACES"
30 PRINT#4:CLOSE4

```

```

0 REM THE UNCOMMON COMMA - MARY WILSON :REM*187
10 PRINTCHR$(147) :REM*220
20 DIM A$(12) :REM*109
30 FOR I=1 TO 12:READ A$(I):NEXT :REM*230
40 FOR I=1 TO 12:PRINT A$(I),,NEXT:REM*150
50 END :REM*178
60 DATA APPLES,PEACHES,PEARS,PLUMS,ORANGES

```

```

,LEMONS :REM*25
70 DATA LINES,GRAPES,BANANAS,CHERRIES,COCO
   NUTS,GRAPEFRUIT :REM*6

```

—MARY E. WILSON, CLEARWATER, FL

\$534 64/128 VERTICAL TABS

Here's an all-purpose 64/128 vertical tabbing routine not available in Commodore Basic. Place the commands listed in line 10 of 64/128 Vertical Tabs into your own programs. The rest of the lines in the program show the Vertical Tab command in action.

```

0 REM 64/128 VERTICAL TABS - JEROME REUTER :REM*171
10 DIM VTAB$(24):DN$=CHR$(19):FORJ=1 TO 24:D
   N$=DN$+CHR$(17):VTAB$(J)=DN$:NEXT J :REM*155
20 PRINTCHR$(147):FORT=24 TO 1STEP-1:PRINT
   VTAB$(T)"VERTICAL TAB ="T:NEXT :REM*153
30 GETA$:IF A$="" THEN 30 :REM*254
40 PRINT VTAB$(22) :REM*152

```

—JEROME E. REUTER, MONCK'S CORNER, SC

\$535 GETTING THE ROW TO PRINT

Magic Trick \$511 (March 1989) shows one way to clean the print head when a row of dots refuses to print. I own Okidata 120 and 180 printers, and both use ribbon cartridges. From time to time, the plastic protect tabs on them go out of alignment so that misprinting results. Realigning the protect tab gives a print head that prints like new.

—JOSEPH CHRISTIE, NEW YORK, NY

\$536 COOLING OFF THE POWER SUPPLY

Most C-64 users have their own ways of keeping their computer's power supply cool, such as pointing a fan at it, leaving space around all sides of the unit for circulation, and so on. Append my program, Short Circuit 64, to your programs, and your computer automatically lets you know, audibly and visually, of an impending "meltdown."

```

0 REM 64 SHORT CIRCUIT - RICHARD PENN :REM*150
10 PRINTCHR$(147):FORT=1 TOD:NEXT:PRINT" {5
   CRSR DN$}"TAB(10)"POWER SUPPLY TOO HOT!" :REM*57
20 FOR T= 1 TO RND(1)*9 :REM*241
30 POKE 54296,15:POKE 54296,0:NEXT:REM*166
40 FOR D=1 TO RND(1)*5:POKE 646,D:NEXT:GOTO
   10 :REM*81

```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

★ THE 10 ALL-TIME BEST GAMES!

RUN

THE **COMMODORE** 64/128 USER'S GUIDE

July 1989
An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

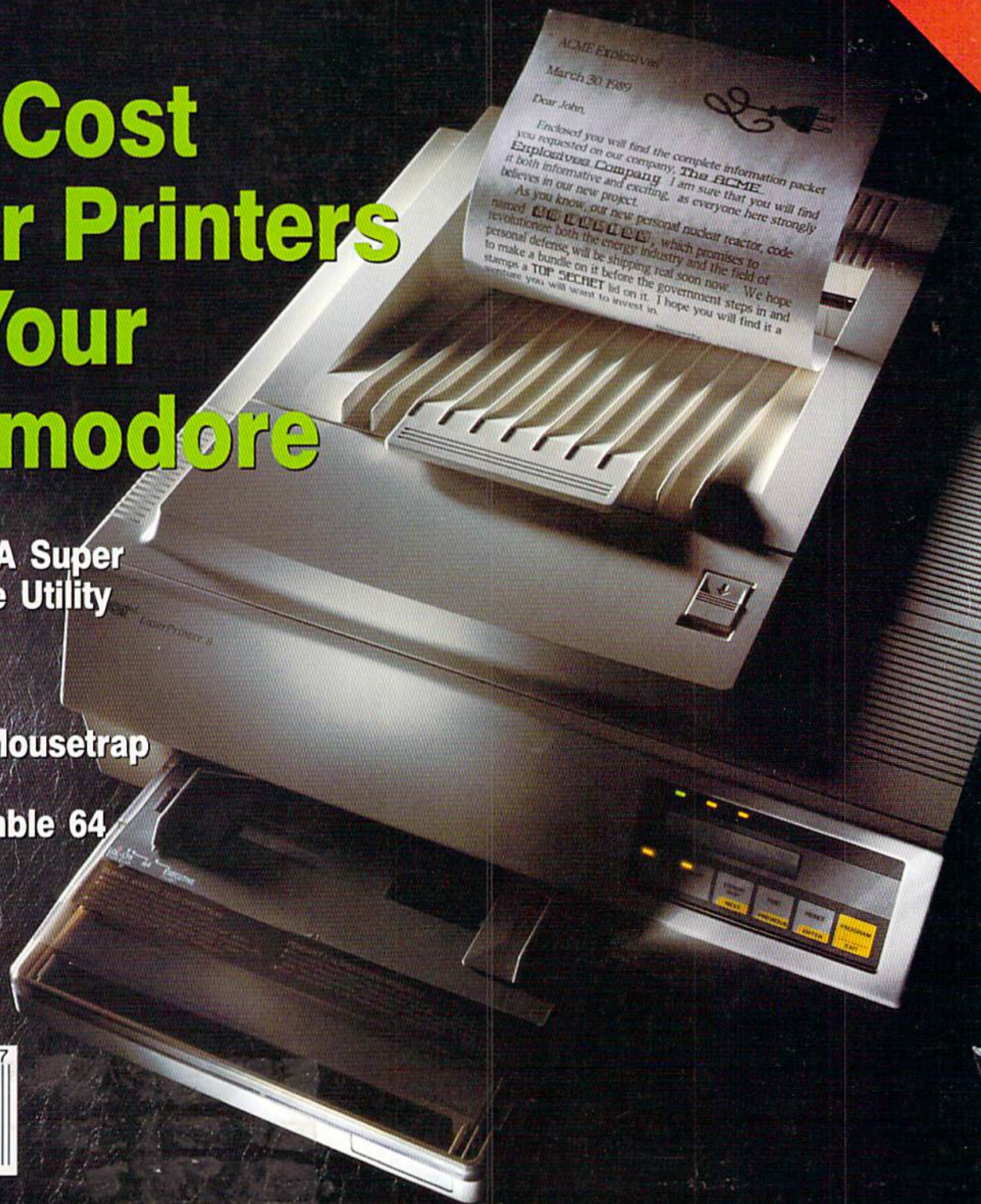
WIN \$5000
Worth of Software!
See Page 18.

Low-Cost Laser Printers For Your Commodore

**RUN Shell—A Super
Disk-and-File Utility**

Plus:

- A Better Mousetrap
- Cubix 128
- A-Z Scramble 64



MAGIC

Protect your computer from static electricity; design sprites with a dry-erase marker; create animated snakes.

Compiled by TIM WALSH

\$537 C-64 SPIRAL SCREEN CLEAR

In my search for different ways of clearing the C-64's screen, I wrote Spiral Clear. This interrupt-driven utility can stay in memory until you need it. Then just type in SYS 49152 in Program or Direct mode to run it. The C-64's text screen is cleared of text in a spiral motion beginning at the screen's home position. The program is fully relocatable, so you may use it with other machine language utilities.

```
Ø REM SPIRALCLEAR 64 - TONY EBERLE :REM*7
1Ø PRINTCHR$(147):SA=49152:REM RELOCATABLE :REM*17
2Ø FORI=SATOSA+177:READA:POKEI,A:CK=CK+A:N :REM*92
EXT :REM*92
3Ø IFCK<>2Ø112THENPRINT"ERROR IN DATA":STO :REM*57
P :REM*57
4Ø FOR T=1 TO 24Ø:PRINT"{CTRL 9} {CTRL Ø} :REM*63
";:NEXT :REM*63
5Ø PRINT"{CTRL Ø}{6 SPACES}SYS 49152 TO CL :REM*1Ø8
EAR SCREEN.{5 SPACES}" :REM*1Ø8
6Ø FOR T=1 TO 22Ø:PRINT"{CTRL 9} {CTRL Ø} :REM*37
";:NEXT :REM*37
7Ø DATA 162,39,142,61,3,162,Ø,142,6Ø,3,169 :REM*92
,Ø,141,62,3,169,4,141,63,3,169 :REM*92
8Ø DATA 192,141,64,3,169,7,141,65,3,162,24 :REM*112
,134,2,169,Ø,133,251,169,4,133 :REM*112
9Ø DATA 252,166,2,24Ø,16,24,165,251,1Ø5,4Ø :REM*18
,133,251,165,252,1Ø5,Ø,133,252 :REM*18
1ØØ DATA 2Ø2,2Ø8,24Ø,172,61,3,169,32,145,2 :REM*19
51,172,6Ø,3,145,251,198,2,16,212 :REM*19
11Ø DATA 48,2,2Ø8,2Ø4,16Ø,39,173,62,3,133, :REM*147
253,173,63,3,133,254,169,32,145 :REM*147
12Ø DATA 253,136,16,251,16Ø,39,173,64,3,13 :REM*53
3,253,173,65,3,133,254,169,32 :REM*53
13Ø DATA 145,253,136,16,251,24,169,4Ø,1Ø9, :REM*217
62,3,141,62,3,173,63,3,1Ø5,Ø,141 :REM*217
14Ø DATA 63,3,56,173,64,3,233,4Ø,141,64,3, :REM*72
173,65,3,233,Ø,141,65,3,16Ø,32 :REM*72
15Ø DATA 162,255,2Ø2,2Ø8,253,136,2Ø8,248,2 :REM*4
38,6Ø,3,2Ø6,61,3,173,61,3,2Ø1,26:REM*4
16Ø DATA 2Ø8,159,96 :REM*66
```

—TONY EBERLE, SANDWICH, IL

\$538 HI-SPEED SEQ FILE READER 128

My Hi-Speed Sequential File Reader for the C-128 uses a machine language routine to read a file from disk and display it on the screen. You can freeze the screen at any point with the no-

scroll key and abort the program with the run-stop key.

The program must be typed in as listed here, with no line renumbering or changes in syntax, and it must be reloaded from disk and run each time you use it.

```
Ø REM"ABCDEFGHJKLMNOPQRSTUVWXYZ" :REM*59
1 FAST:TRAP4:INPUT"FILENAME";A$:INPUT"DRIV :REM*176
E #";D :REM*176
2 IF A$>" " AND D>7 AND D<12 THEN OPEN 2,D,2,A :REM*177
$:ELSE:END :REM*177
3 FORI=7176TO7198:READA:POKEI,A:NEXT:PRINT :REM*228
CHR$(14):SYS7176 :REM*228
4 DCLEARU(D) :REM*16
5 DATA162,2,32,198,255,32,2Ø7,255,32,45,19 :REM*68
9,32 :REM*68
6 DATA225,255,24Ø,4,165,144,24Ø,241,76,231 :REM*1Ø
,255 :REM*1Ø
```

—WILLIAM COLEMAN, GREEN COVE SPRINGS, FL

\$539 ANOTHER SEQUENTIAL READER

Here's another program for reading sequential files in both 64 and 128 modes. Not only is it useful for scanning the contents of word processor files, it also helps C-128 users appreciate the greatly enhanced speed of William Coleman's Hi-Speed Reader, listed above.

```
Ø REM 64/128 SEQUENTIAL FILE READER - JOHN :REM*1Ø8
REYNOLDS :REM*1Ø8
1Ø INPUT"ENTER FILENAME";A$ :REM*191
2Ø OPEN 2,8,2,A$+"",S,R" :REM*154
3Ø GET#2,A$:PRINTA$;:IF ST<>64 THEN 3Ø :REM*1Ø5
:REM*1Ø5
4Ø CLOSE2 :REM*45
```

—JOHN T. REYNOLDS, FORT WALTON BEACH, FL

\$53A STATIC-GUARD

Here at the *RUN* editorial offices, carpeting generates static electricity, particularly in the winter months when the air is dry. When we received one of the first 64Cs to come off the Commodore assembly lines, an editor reached for the on/off switch by feel and—zap!—a static discharge entered one of the joystick ports and fried *all* the internals. The computer was totally useless and needed repair. Now, when the user ports are not in use, we cover them with a three-inch length of electrical tape. To protect the pins from tape glue, we attach a two-inch length of paper to the glue side of the tape before affixing it to the user ports.

—BUZZ BJORNSEN, EDITORIAL STAFF

\$53B C-64 KEY CLICKER

Spice up your next program with my little C-64 Key Clicker ►

MAGIC

program. When you run it, press any key to make the monitor emit a clicking sound. I added a latching routine to permit only one click per keypress.

```

0 REM C-64 KEY CLICKER - RYAN WEAVING
                                :REM*191
10 FORT=49152 TO 49231:READ A:POKE T,A:CK=
  CK+A:NEXT                      :REM*13
20 IF CK<>9467 THEN PRINT "ERROR IN DATA S
  TATEMENTS...":END              :REM*72
30 PRINT"KEY CLICKER ON":SYS 49152:REM*106
40 DATA 120,169,18,141,20,3,169,192,141,21
  ,3,88,169,0,141,252,3,96,172   :REM*49
50 DATA 252,3,192,0,208,21,174,197,0,224,6
  4,208,3,76,49,234,169,1,141,252 :REM*0
60 DATA 3,32,61,192,76,49,234,174,197,0,22
  4,64,208,5,169,0,141,252,3,76  :REM*22
70 DATA 49,234,169,15,141,24,212,160,0,200
  ,192,255,208,251,169,0,141,24  :REM*127
80 DATA 212,96,169              :REM*235

```

—RYAN WEAVING, MODESTO, CA

\$53C GRAPHIC MAGIC

You can design sprites on the glass of your video monitor with dry-erase markers, which you can buy at any art supply store. Then use your graphic program and mouse, joystick or keyboard to trace the graphic beneath the sketch drawn on the screen.

When you're done, wipe the drawing off the screen with a dry cloth, then add the finishing touches to the detail. You'll find that creating sprites this way is much easier and less time-consuming.

—JONATHAN LEINONEN, COVINGTON, MI

\$53D PROGRAMMING THE C-128'S ALT KEY

My program, ALT Key, peeks location 211 to detect when the ALT key is pressed. Using this program and the ALT key with a function key, or with a combination of function and shift keys, allows clever programmers to create 16 function keys.

```

0 REM PROGRAMMING THE ALT KEY - RICHARD MI
  LNE                             :REM*6
10 SCNCLR:POKE 828,183:CR$=CHR$(13):R=8:S=
  211:DIM X(144)                  :REM*171
20 SCNCLR:PRINT"PRESS ALT & FUNCTION KEYS
  SIMULTANEOUSLY"                 :REM*114
25 PRINT"PRESS {LB.} TO END"      :REM*34
30 GETKEY$:IF A$=CHR$(92) THENPRINT" ":PO
  KE 828,173:END                  :REM*16
40 T%=ASC(A$):IF T%>132 AND T%<141 GOTO 50
  :ELSE GOTO 140                  :REM*140
50 IF T%=133 AND PEEK(S)= R THEN A$="ALT/F
  1"+CR$                          :REM*10
60 IF T%=134 AND PEEK(S)= R THEN A$="ALT/F
  3"+CR$                          :REM*117
70 IF T%=135 AND PEEK(S)= R THEN A$="ALT/F
  5"+CR$                          :REM*177
80 IF T%=136 AND PEEK(S)= R THEN A$="ALT/F
  7"+CR$                          :REM*242
90 IF T%=137 AND PEEK(S)= R+1 THEN A$="SHI
  FT/ALT/F2"+CR$                  :REM*8

```

```

100 IF T%=138 AND PEEK(S)= R+1 THEN A$="SH
  IFT/ALT/F4"+CR$                 :REM*166
110 IF T%=139 AND PEEK(S)= R+1 THEN A$="SH
  IFT/ALT/F6"+CR$                 :REM*115
120 IF T%=140 AND PEEK(S)= R+1 THEN A$="SH
  IFT/ALT/F8"+CR$                 :REM*64
130 PRINT" ";CHR$(157);A$;CHR$(164);CHR$(1
  57)                             :REM*117
140 IF A$=CR$ OR RIGHT$(A$,1)=CR$ THEN X=X+
  1                               :REM*94
150 A$="":GOTO 30                 :REM*198

```

—RICHARD MILNE, GLENDALE, AZ

\$53E SNAKES ALIVE!

While experimenting with the C-128's 40-Column-mode line-drawing commands, I created a wiggling, squiggling series of lines. With a little refinement, I made an animated snake.

Snakes Alive! has the potential for various applications in C-128 games. Since it is not a sprite, it can operate independently of sprite commands. Experiment with the program to create your own customized snake.

```

0 REM C-128 SNAKES ALIVE! - KEN HUEBNER
                                :REM*130
10 L=30:R=130:T=40:B=160:XB=80:YB=100:GRAP
  HIC 3,1:DRAW 2,XB,YB            :REM*28
20 DO:IF XB>R OR XB<L OR YB<T OR YB>B THEN
  40                              :REM*109
30 DD=30:IF RND(1)<.5 THEN DD=-30 :REM*118
40 D=D+DD:IF D<0 THEN D=D+360    :REM*168
50 IF D>360 THEN D=D-360         :REM*45
60 XE=XB:YE=YB:LOCATE 7;D        :REM*177
70 XB=RDOT(0):YB=RDOT(1)         :REM*174
80 DRAW 0,X4,Y4 TO X3,Y3         :REM*70
90 DRAW 2,XE,YE TO XB,YB         :REM*154
100 X4=X3:Y4=Y3                  :REM*231
110 X3=X2:Y3=Y2                  :REM*247
120 X2=XE:Y2=YE                  :REM*9
130 LOOP                          :REM*111

```

—KEN HUEBNER, WATERTOWN, WI

\$53F COUNTERFEIT FILENAMES

Certain keyboard characters, such as the asterisk and question mark, cannot be used as parts of filenames when saving files to disk. The dollar sign, however, can be added to filenames to work with most Basic 7.0 disk commands. It can also be used in C-64 filenames, provided you place a zero and a colon in front of the filename as follows:

SAVE "0:FILENAME \$\$\$\$.8.

—RICHARD PENN, MONTREAL, QUEBEC, CANADA ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

RUN W·O·R·K·S

Full 64
and 128 Mode
Support!

Productivity Software
with a Creative Advantage

RUN Works, a new dimension to productivity software, giving you top quality programs at an economical price! Best of all, **RUN Works** is fully **C-64** and **C-128** compatible!

Money Manager. Have you ever wondered where your money goes each month? Then Money Manager is for you! This personal budget and record-keeping system will allow you to keep track of your income and expenses. . . so you can stay within your budget!



Label Base. Most people need to produce address labels in large quantities from time-to-time, and using your Commodore and printer makes the job quick and efficient. Label Base makes this time-consuming chore a snap.



RUN Paint. This full-featured paint and draw program has more drawing options and tools than most commercial packages, plus it offers compatibility with the popular Doodle! and Koala graphic formats. Professionals and amateurs alike will find this a fantastic tool for computer art.



RUN PAINT

Graphmaker. A graph-lover's delight! Generate beautiful charts and graphs of your custom data sets for analysis and impressive presentation.



RUN Term. Nearly half of all Commodore users own modems. RUN's user friendly RUN Term reveals the exciting world of BBSs, on-line networks and information exchanges. With advanced features like 300/1200 Baud support, autodialing, ASCII capture of text, XModem and Punter protocols and much more.



Form Writer. This program lets you design and print letters, invoices, surveys, or any other kind of form for your small business or home application. Great for school projects too!



RUN Shell. This powerful disk utility lets 1541, 1571 and 1581 users access, maintain and manipulate files with ease. It's a menu-driven disk manager that makes erasing, renaming or copying files or disks as easy as the press of a key. Plus a whole lot more!



Satisfaction Guarantee: Use **RUN Works** for a full 30 days. If it doesn't satisfy your productivity needs, simply return the disk and fully illustrated documentation book for a complete refund!

To order, mail this coupon or call 1-800-343-0728

Yes! Send me **RUN Works** right away!

☐ \$24.97 enclosed. ☐ Charge my: ☐ American Express ☐ MasterCard ☐ Visa

Card # _____ Exp. Date _____

Signature _____

Name _____

Address _____

City, State, Zip _____

Foreign Airmail, please add \$3.95 per disk.

RN789

RUN Works
IDG Communications/Peterborough
80 Elm St.
Peterborough, NH 03458
or call 1-800-343-0728

Take a Look Inside Your 128D

RUN

THE **COMMODORE** 64/128 USER'S GUIDE

August 1989
An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

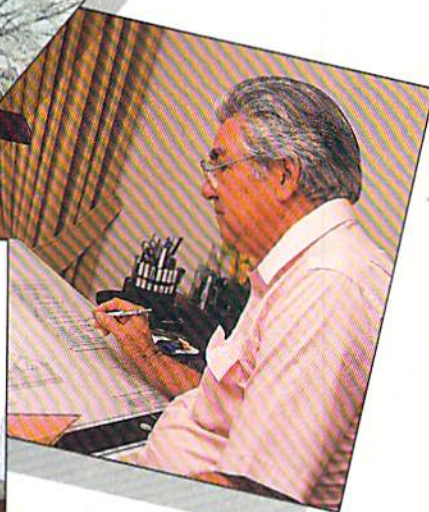
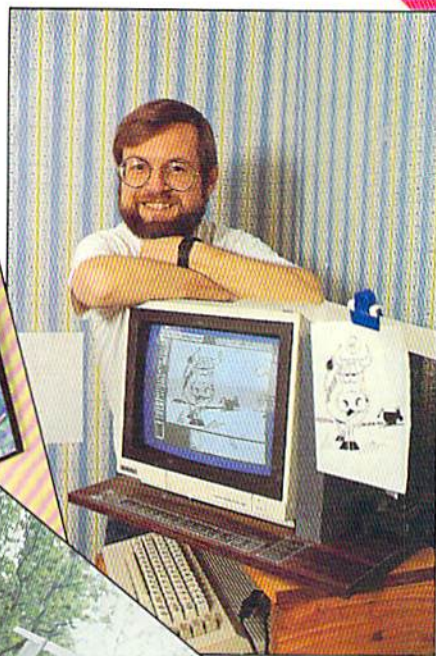
WIN \$5000
Worth of Software!
See Page 18.

Put Your Commodore To Work

Creative Users Show You How

LABEL BASE 64/128
Database Prints
Mailing Labels

Plus:
A Memorable
Animated
C-64 Game



MAGIC

Load fonts into RUN Paint in four easy steps; add a new cursor to your C-128; position text on the C-64 screen.

Compiled by TIM WALSH

\$540 FONTS FOR RUN PAINT 64/128

A few RUN readers wrote or phoned our editorial offices asking how to load fonts into RUN Paint (March 1989). It's easy; just follow these four steps:

1. Save one or more Commodore font files to a work disk.
2. Rename each font file to be used with RUN Paint with the prefix "RPF". (For example, "ROUND FONT" is renamed "RPF.ROUND FONT".)
3. Run RUN Paint, then place the work disk with the renamed fonts into the drive, select the Font option from the Load menu and place the pointer on the filename of the desired font. Press the left mouse button (or joystick fire-button) to load it into RUN Paint.
4. Select the Text menu. Each font loaded into RUN Paint will be displayed. Select a font by placing the pointer on the font name and pressing the mouse or joystick button.

—TIM WALSH, MAGIC COLUMNIST

\$541 GOING DOWN, ANYONE?

Letter Dropper, a 64- and 128-mode trick, makes the contents of A\$ drop down from the top of the screen and stop on the fourth line from the top to form a statement. The letters may drop down to any line desired by changing the value of DD.

```
Ø REM 64/128 LETTER DROPPER - ERIK PEDERSEN
N                                     :REM*134
1Ø PRINT CHR$(147): A$="RUN'S MAGIC TRICK
S."                                 :REM*57
2Ø DD=4:L=LEN(A$):RM=(4Ø-L)/2-1    :REM*124
3Ø FOR J=1 TO L:AS=ASC(MID$(A$,J,1)):AS=AS
*AS*2:M1$=MID$(A$,J,1):PRINT" {HOME}"
                                     :REM*89
4Ø IF M1$<>" {2 SPACES}" THEN FOR K=1 TO DD-
2:PRINT TAB(RM+J)M1$"{CRSR UP}" :REM*28
5Ø PRINT TAB(RM+J)" ":NEXT:PRINT TAB(RM +
J)M1$:NEXT:PRINT                   :REM*174
```

—ERIK PEDERSEN, APO, NY

\$542 GOING RIGHT, ANYONE?

If you prefer that the characters move out from the left of the screen to form a statement, then Left Letters Zoom is for you. As in the above trick, the statement resides in A\$.

```
Ø REM LEFT LETTERS ZOOM - ERIK PEDERSEN
                                     :REM*174
1Ø PRINTCHR$(147): A$="RUN MAGIC TRICKS"
                                     :REM*151
2Ø L=LEN(A$):RM=(4Ø-L)/2-1         :REM*119
3Ø FOR X=L TO 1 STEP -1:AS=ASC(MID$(A$,X,1
```

```
):AS=AS*AS*3:M1$="{2 SPACES}" + MID$(A$,
X,1)                               :REM*69
4Ø IF M1$<>" {2 SPACES}" THEN FOR K=1 TO X:P
RINT TAB(RM+K-1)M1$"{CRSR UP}":NEXT:NEX
T:PRINT                             :REM*6Ø
```

—ERIK PEDERSEN, APO, NY

\$543 64 FAST DIRECTORY

Not only does 64 Fast Directory quickly display the C-64's disk directory, but it quietly resides in memory until needed. After you run the program, entering SYS 49152 in Direct or Program mode will display the disk directory.

```
Ø REM C-64 EASY DIRECTORY - JEFF PANICI
                                     :REM*96
1Ø PRINT"{SHFT CLR}":CK=.:PRINT"CHECKING:
":S=49152                           :REM*197
2Ø FORX=STOS+88:READD:POKEX,D:CK=CK+D:PRIN
T"{HOME}{CRSR DN}"TAB(1Ø);CK:NEXT
                                     :REM*1Ø7
3Ø IFCK<>12836THENPRINT"ERROR!!!":END
                                     :REM*113
4Ø PRINT"{SHFT CLR}{CTRL 9}SYS 49152 TO SE
E DIRECTORY.":END                   :REM*149
5Ø DATA 32,68,229,169,36,133,251,169,5,162
,8,16Ø,Ø,32,186,255,169,1,162 :REM*119
6Ø DATA 251,16Ø,Ø,32,189,255,32,192,255,16
2,5,32,198,255,32,2Ø7,255,32 :REM*88
7Ø DATA 2Ø7,255,32,2Ø7,255,32,2Ø7,255,32,2
Ø7,255,72,32,2Ø7,255,168,1Ø4 :REM*235
8Ø DATA 17Ø,165,144,2Ø8,22,152,32,2Ø5,189,
169,32,32,21Ø,255,32,2Ø7,255 :REM*252
9Ø DATA 2Ø8,248,169,13,32,21Ø,255,184,8Ø,2
14,32,2Ø4,255,169,5,76,195,255 :REM*226
```

—JEFF PANICI, SANDWICH, IL

\$544 ECHO CLONE

While working on a Magic trick submission, I discovered a routine, familiar to users of telecommunication software, that produces an "echo" effect, printing two characters to the screen for each keypress. While this routine has little practical use, it can be incorporated into both 64- and 128-mode programs for telecommunication terminal package emulation. Pressing the left arrow key (←) exits the mode.

```
Ø REM 64/128 ECHO MODE EMULATOR - TIM WALSH
H                                     :REM*148
1Ø PRINTCHR$(147)"ECHO MODE EMULATION. PRE
SS {LEFT ARROW} TO END":S=3:OPENS,S ▶
```


MAGIC

```

:REM*234
20 GET T$:IF T$="" THEN 20 :REM*123
30 IF T$="{LEFT ARROW}" THEN 50 :REM*93
40 PRINT T$;:PRINT#S,T$;:GOTO20 :REM*23
50 END :REM*178

```

—TIM WALSH, MAGIC COLUMNIST

\$545 A WHOLE NEW C-128 CURSOR

Here's an eye-catching routine for the C-128. Underscore/Overscore Cursor 128 creates a cursor on the C-128's 80-column screen consisting of flashing top and bottom lines. Disable this cursor with the run-stop/restore combination.

```

0 REM C-128 UNDERSCORE/OVERSCORE CURSOR -
  ELIAS TABELLO :REM*177
10 M=4864:FOR X=M TO M+17:READ A$:POKE X,
  DEC(A$):NEXT SYS 4864 :REM*248
20 DATA A9,1,A2,B,20,CC,CD,A9,1B,20,D2,FF,
  A9,55,20,D2,FF,60 :REM*44

```

—ELIAS TABELLO, ISLINGTON, ONTARIO, CANADA

\$546 DISK STAMP 64

Disk Stamp 64 lets you safely write an "invisible" copyright or identification message up to 79 characters long to your 1541-formatted, single-sided disk. Type in Disk Stamp 64 and run it, using an unimportant disk, then press the F1 key to write a new or edited message to disk. Once there's a Disk Stamp message on the disk, this program will display the invisible message. Press F5 to read another disk and press F7 to quit.

```

0 REM DISK STAMP 64 - ROBERT COOK :REM*165
10 PRINT"DISK STAMP 64" :REM*226
20 PRINT"INSERT DISK AND PRESS SPACE" :REM*199
30 GETG$:IFG$<>" " THEN 30 :REM*22
40 OPEN15,8,15:OPEN2,8,2,"#":PRINT#15,"U1"
  ;2;0;18;0:PRINT#15,"B-P";2;177 :REM*55
50 FORI=1TO79:GET#2,G$:G$=G$+CHR$(0):Z$=Z$
  +CHR$(0) :REM*110
60 IF(ASC(G$)AND127)>31 THEN IN$=IN$+LEFT$(G
  $,1):NEXT :REM*214
70 PRINT"F1-WRITE TEXT TO DISK" :REM*117
80 PRINT"F5-EXIT FOR NEW DISK" :REM*136
90 PRINT"F7-QUIT PROGRAM" :REM*41
100 CR=LEN(IN$)+1:PRINT"{3 CRSR DNs}{CTRL
  1}"IN$"{CRSR LF}"; :REM*174
110 CP=1024+PEEK(214)*40+(PEEK(211)-40)*-(P
  EEK(211)>39)):POKE212,0 :REM*121
120 CC=PEEK(CP):SL=LEN(IN$) :REM*174
130 POKECP,CC+128:FORI=1TO64:GETG$:IFG$=""
  THEN NEXT :REM*76
140 POKECP,CC:ON-(G$="{FUNCT 1}")-(G$="{FU
  NCT 5}")*2-(G$="{FUNCT 7}")*3GOTO200,2
  30,230 :REM*129
150 IFG$="{CRSR RT}" AND CR<=SL THEN CR=CR+1:P
  RINTG$; :REM*226
160 IFG$="{CRSR LF}" AND CR>1 THEN CR=CR-1:PRI
  NTG$; :REM*43
170 IFG$=CHR$(20) AND SL>0 AND CR=>SL THEN IN$=L

```

```

EFT$(IN$,SL-1):CR=CR-1:PRINTG$;:REM*93
180 IFG$<" "ORG$>"{LEFT ARROW}" OR CR>79 THEN
  110 :REM*7
190 IN$=LEFT$(IN$,CR-1)+G$+MID$(IN$,CR+1):
  CR=CR+1:PRINTG$;:GOTO110 :REM*27
200 IN$=IN$+Z$:PRINT#15,"B-P";2;177
  :REM*130
210 FORL=1TO79:PRINT#2,MID$(IN$,L,1);:NEXT
  :REM*6
220 PRINT#15,"U2";2;0;18;0 :REM*192
230 CLOSE2:CLOSE15:IFG$<"{FUNCT 7}" THEN RUN
  :REM*163

```

—ROBERT B. COOK, WATERTOWN, MA

\$547 HI-SPEED C-64 CURSOR POSITIONING

Positioning text on the C-64's screen has never been easier or faster if you use my Hi-Speed C-64 Cursor Positioning routine in your programs. This machine language utility can be entered in a minute or so, but be careful not to change any of the line numbers or the contents of the lines, most especially line 10, which contains the word REM, a space, then 25 Xs.

After typing in the program, run it, list it, then delete every line except line 10. Line 10 can then be added to your own C-64 programs as the first line in the program. To position the text, use this syntax:

SYS 2054, Row #, Column #:PRINT "YOUR MESSAGE"

```

10 REM XXXXXXXXXXXXXXXXXXXXXXXXXXXX :REM*145
20 FOR X= 2054 TO 2069:READ Y:POKE X,Y:CK=
  CK+Y:NEXT :REM*13
30 IF CK <> 2302 THEN PRINT "ERROR IN DATA
  ...":END :REM*134
40 DATA 32,253,174,32,158,183,134,214,32,2
  41,183,134,211,76,16,229 :REM*42
50 REM RUN, THEN LIST AND DELETE LINES 20
  THROUGH 50 THEN SAVE LINE 10 :REM*100

```

—HENRY E. SHOTWELL, BERWICK, PA

\$548 DISPLAYING C-64 STRINGS

The PRINT A\$ command prints variable A\$'s contents to the screen for your examination. Unfortunately, it won't properly print color commands, cursor movements and other non-printing characters.

The solution is to enter POKE 212,1 before printing the string. For example, if A\$="{20 CRSR RTs}", then enter these commands to print A\$:

POKE 212,1:PRINT A\$

—RICHARD PENN, MONTREAL, QUEBEC, CANADA ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

RUN

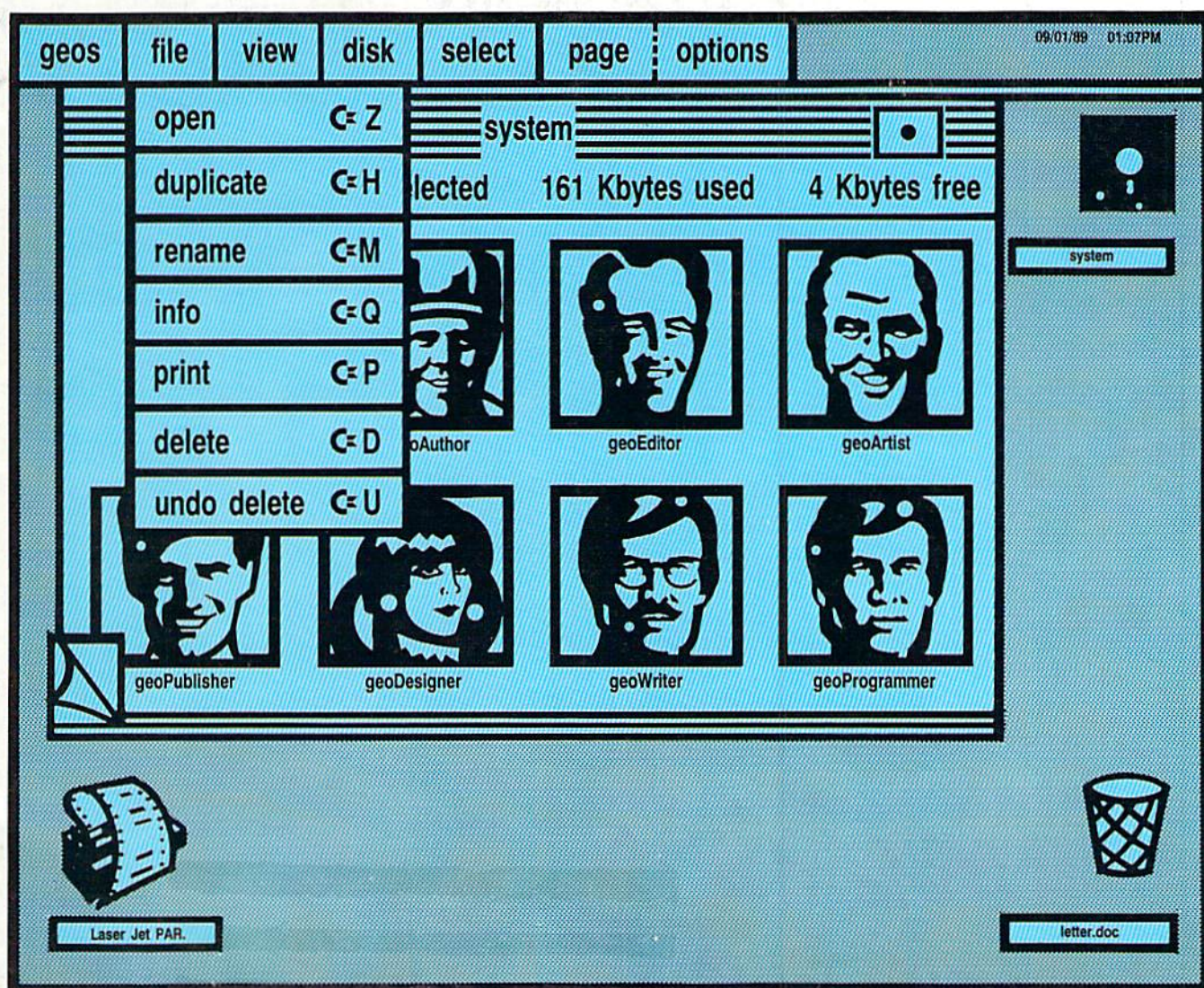
THE **COMMODORE** 64/128 USER'S GUIDE

September 1989
An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

**SPECIAL
GEOS
ISSUE**

- ▶ **Meet the Star geoPlayers**
- ▶ **Interview with Berkeley Softworks**



Plus:

- ▶ **GEOS Multicolor Displays**
- ▶ **Perpetual Calendar 64/128**
- ▶ **Shell-Shock Arcade Game... And More!**



MAGIC

Learn how to maintain and alphabetize disk directories and generally enhance your library of 1541, 1571 and 1581 disk utilities.

Compiled by TIM WALSH

\$549 EMERGENCY SEQ & USR FILE VIEWER

Did you ever list a disk directory on your C-64, see a sequential or user file listed, yet couldn't load the contents of that file? Most program files, provided they're written in Basic, can be loaded and listed, but sequential and user files cannot.

To find the contents of a SEQ or USR file, append a ,S to sequential filenames and a ,U to user filenames, then load in 64 mode. The loading syntax is:

For sequential files: LOAD "FILE,S",8

For user files: LOAD "FILE,U",8

Once a file is loaded, press run-stop/restore and enter LIST. Although the first few characters will be corrupted, you should see enough data to learn the contents of a file. This trick usually saves you the trouble of loading and running the utility or application used to create the file.

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$54A BASIC C-64 DIRECTORIES

Use the following routine in your own Basic 2.0 programs to read a disk's directory without corrupting a program currently residing in memory. The significance of this program over other directory utilities is that it creates arrays of the block data and filenames. Because this information is in arrays, you can organize it for use in your programs, arrange it in two columns, send it to the printer, and so on.

```
Ø REM C-64 DIRECTORY - ELAINE FOSTER
                                :REM*237
1Ø REM STORES DIRECTORY DATA IN ARRAYS
                                :REM*224
2Ø DIMF$(144):DIMB$(144):NU$=CHR$(Ø)
                                :REM*182
3Ø OPEN3,8,Ø,"$Ø":POKE781,3:SYS65478:GETA$
,A$                                :REM*166
4Ø GETA$,A$:IFA$=""THEN8Ø        :REM*173
5Ø GETA$,B$:B$(N)=STR$(ASC(A$+NU$)+ASC(B$+
NU$)*256)                        :REM*112
6Ø GETA$:IFA$=""THENPRINTB$(N)F$(N):N=N+1:
GOTO4Ø                            :REM*238
7Ø F$(N)=F$(N)+A$:GOTO6Ø        :REM*215
8Ø CLOSE3:SYS65484:END           :REM*159
```

—ELAINE FOSTER, LAUNCESTON, TASM., AUSTRALIA

\$54B HAWAII FIVE-O!

As a computer technician and dealer, I'd like to contribute the following Magic to RUN readers:

1. Surprisingly, while the Commodore 1571 disk drive is a

good drive, it is not as durable as the 1541. Once it goes out of alignment, expect it to go out of alignment on a regular basis. To determine if your 1571 is going out of alignment, try a series of disk commands on a variety of disks. If the 1571 hesitates or makes a racket, chances are it is going out of alignment.

2. Furthermore, if a disk sticks in the 1571 drive, never force it, or you'll damage the upper read/write head. Another way to damage the drive is to initialize (OPEN 15,8,15,"1":CLOSE 15) without a disk in the drive.

3. If you daisy-chain a 1581 and an external 1571 to the C-128D, expect problems when powering up the computer if the external drives are not already on.

4. On the plus side, the upgraded 1571 in the C-128D is mechanically the same 1571 that Commodore has sold for four years, sans cover. I have interchanged the 1571 in the C-128 with a standard 1571 without a hitch.

5. Never use the Delete Records options in Pocket Filer 2, from Digital Solutions. Instead, use a disk editor or record deleter to prevent problems. Second, use your RAM expander to make backup disks, because it works faster and more efficiently than a disk drive. Finally, disable the restore key with a Poke command before using Pocket Filer, because accidentally pressing restore can crash the program. The Pokes for disabling the restore keys are:

C-64: POKE 792,193

C-128: POKE 792,125

—SCOTT SUMIDA, KAILUA, HI

\$54C CLEAN DISK DRIVES

Readers have sent me a couple of Magic tricks on cleaning the 1541 and 1571 disk drives, but I cringe at the "advice" offered by these readers. To wit:

A few suggested inserting clean rags dipped in either alcohol or Freon into the drive. One imaginative reader even suggested saturating a cleaning disk with alcohol and running it in the disk drive for twenty seconds! You'll never catch me putting something that flammable and volatile into an electrical device. Furthermore, rags would tend to introduce more lint than probably already exists in the drive.

Never put rags, alcohol or other chemicals into your drive. If dust and dirt cause read/write problems, use a commercial cleaning disk, available at computer stores. If it doesn't clean to your satisfaction, take the drive to an authorized Commodore service center or let an experienced hardware-savvy friend take it apart and clean it for you.

—TIM WALSH, MAGIC COLUMNIST

\$54D ALPHA ORDER 64/128

I recently developed Alpha Order 64/128 for alphabetizing files on a 1541-formatted disk. It's a tad longer than most ▶

MAGIC

Magic tricks, but you'll find it an invaluable disk utility.

The program informs you as it proceeds through reading and alphabetizing entries, de-allocating unneeded directory blocks and writing the new directory list. Only when you're satisfied with the integrity of the alphabetized test disk should you use it on a valuable data disk.

```

Ø REM 1541 DISK ARRANGER 64/128 - SHAWN WI
SCHOEFFER :REM*227
1Ø DIM TR(19),SE(19),TD$(255),DE$(144),SB$
(144):CE=Ø:CS=1:TB=1:Z$=CHR$(Ø):X$=Z$ :REM*2Ø9
2Ø FORI=1TO: X$=X$+X$:NEXTI:TR(1)=18:SE(1)
=1:OPEN15,8,15:OPEN5,8,5,"#" :REM*29
3Ø DO$="READING":PRINT#15,"U1:5"8,TR(CS),S
E(CS):GOSUB21Ø :REM*17
4Ø FORI=ØTO255:GET#5,TD$(I):IFTD$(I)=""THE
NTD$(I)=Z$ :REM*227
5Ø NEXTI:TR(CS+1)=ASC(TD$(Ø)):SE(CS+1)=ASC
(TD$(1)) :REM*17
6Ø FORI=2TO226STEP32:IFTD$(I)=Z$THEN8Ø
:REM*21
7Ø CE=CE+1:FORJ=ØTO29:DE$(CE)=DE$(CE)+TD$(
I+J):NEXTJ :REM*191
8Ø NEXTI:CS=CS+1:IFSE(CS)<>255THEN3Ø
:REM*7Ø
9Ø TE=CE:SB$(1)=DE$(1):PRINT"ALPHABETIZING
ENTRY{CRSR DN}":IFTE=1THEN2ØØ :REM*2Ø6
1ØØ FORCE=2TOTE:FORCB=1TOTB:IFRIGHT$(DE$(C
E),27)>RIGHT$(SB$(CB),27)THEN12Ø:REM*1
11Ø FORI=TBTOCBSTEP-1:SB$(I+1)=SB$(I):NEXT
I:SB$(CB)=DE$(CE):GOTO13Ø :REM*2Ø3
12Ø NEXTCB:SB$(TB+1)=DE$(CE) :REM*252
13Ø TB=TB+1:PRINT"{CRSR UP}"CE"{CRSR LF}"/
TE:NEXTCE:SR=CS-1:SW=INT((TE+7)/8):DO$
="DEALLOC" :REM*153
14Ø IFSR>SWTHENFORCS=SW+1TOSR:PRINT#15,"B-
F:Ø;TR(CS);SE(CS):GOSUB21Ø:NEXTCS
:REM*157
15Ø TR(SW+1)=Ø:SE(SW+1)=255 :REM*1Ø7
16Ø DO$="WRITING":FORCS=1TOSW:PRINT#15,"B-
P:5,Ø:PRINT#5,X$;X$; :REM*172
17Ø Y$=CHR$(TR(CS+1))+CHR$(SE(CS+1)):FORI=
1TO8:CE=8*CS-8+I:IFI>1THENY$=Z$+Z$
:REM*2Ø6
18Ø IFCE<=TETHENPRINT#5,Y$;SB$(CE);:NEXTI
:REM*164
19Ø PRINT#15,"U2:5,"8,TR(CS),SE(CS):GOSUB2
1Ø:NEXTCS :REM*246
2ØØ PRINT"END OF DIRECT ORDER":CLOSE5:CLOS
E15:END :REM*79
21Ø INPUT#15,A,B$,C,D:IFA>ØTHENPRINT"DOS {
CTRL 9}"B$;A"{CTRL Ø}BLOCK"C;D:GOTO2ØØ
:REM*142
22Ø PRINTDO$ BLOCK"TR(CS)SE(CS):RETURN
:REM*177

```

—SHAWN WISCHOEFFER, NAPERVILLE, IL

\$54E WHICH DISK DRIVE IS WHICH?

Did you ever wish for a routine that detects the type of disk drive your program was accessing? If so, this handy

C-64 and C-128 routine, called Which Drive Is Which?, determines the type of drive assigned to each active device number. It distinguishes between a 1541, 1571 and 1581, and it should work fine with most 1541 and 1571 clones.

```

Ø REM WHICH DRIVE IS WHICH? - DON DROHMAN
:REM*5Ø
1Ø INPUT"ENTER DRIVE TO CHECK";DE :REM*161
2Ø OPEN 15,DE,15:CLOSE15 :REM*8
3Ø IF ST<>Ø THEN PRINT"DEVICE NOT PRESENT"
:END :REM*173
4Ø OPEN15,DE,15,"UI":INPUT#15,EN$,EM$,ET$,
ES$:CLOSE15 :REM*111
5Ø DN$=RIGHT$(EM$,4) :REM*134
6Ø PRINT"THIS IS A "DN$ " DRIVE":GOTO 1Ø
:REM*76

```

—DON DROHMAN, BELLINGHAM, WA

\$54F 1581 BOOT PROTECTOR

1581 Boot Protector, when run on a 1581 disk drive, creates a short one-block partition over track one, sector zero, on a 1581-formatted disk. You can then run an autoboot maker on the disk to make the disk autoboot. After that, you may issue the Validate and Collect commands with relative impunity, since neither de-allocates that disk's otherwise fragile autoboot sector.

```

Ø REM 1581 C-128 AUTOBOOT PROTECTOR - JIM
DERRY :REM*87
1Ø PRINT"PUT 1581 DISK INTO DRIVE. PRESS A
KEY" :REM*76
2Ø GETA$:IFA$=""THEN2Ø :REM*212
3Ø OPEN15,DE,15:PRINT#15,"/Ø:BOOT SECTOR,"
+CHR$(1)+CHR$(Ø)+CHR$(1)+CHR$(Ø)+",C":C
LOSE15 :REM*133
4Ø PRINT"NOW RUN A C-128 AUTOBOOT MAKER. D
ISK IS PROTECTED." :REM*187

```

—JIM DERRY, EAST DETROIT, MI

\$550 128 UN-AUTOBOOT MAKER

Making a disk "autoboot" on your C-128 is a handy feature, but what do you do when you no longer want the disk to autoboot? Rather than re-format the disk, use my 128 Un-Autoboot Maker. It erases the boot data in track 1, sector 0 so that autobooting no longer occurs on startup or after a reset, and it leaves any other files intact.

Incidentally, 128 Un-Autoboot Maker works on 1581-formatted disks, too. You'll find it effective on 3½-inch disks protected by Jim Derry's 1581 Boot Protector, above.

```

Ø REM UN-AUTOBOOT MAKER - LARRY PANKEY
:REM*175
1Ø N$=CHR$(Ø):SCNCLR:PRINT"PLACE DISK TO U
N-AUTOBOOT IN DRIVE" :REM*66
2Ø PRINT"PRESS A KEY":GETKEYA$ :REM*1Ø6
3Ø DCLOSE:OPEN15,8,15,"IJ":IF DS THENPRINT
DS$:CLOSE 15:END :REM*199
4Ø OPEN8,8,8,"#" :REM*147
5Ø PRINT#15,"U1";8;Ø;1;Ø :REM*164
6Ø FOR A=Ø TO 24:GET#8,A$:B$=B$+CHR$(ASC(A
$)):NEXT :REM*91

```


M A G I C

```

70 IF LEFT$(B$,3)="CBM" THEN BEGIN :REM*233
80 X=8:DO :REM*59
90 A$=MID$(B$,X,1):C$=C$+A$:X=X+1:LOOP UNTIL A$=N$ :REM*1
100 C$=LEFT$(C$,LEN(C$)-1):PRINT"BOOT FILE NAME IS:"C$ :REM*32
110 BEND:ELSE PRINT "NOT AN AUTOBOOT DISK" :DCLOSE:END :REM*111
120 PRINT#15,"U1";8;0;1;0 :REM*226
130 PRINT#15,"B-P";8;0 :REM*203
140 FOR A=1 TO 255:PRINT#8,N$;:NEXT :REM*214
150 PRINT#15,"U2";8;0;1;0 :REM*62
160 PRINT#15,"B-F";0;1;0 :REM*124
170 DCLOSE:PRINT"ALL DONE":END :REM*51

```

—LARRY PANKEY, DANA POINT, CA

\$551 HEADER MANIPULATOR 64

Header Manipulator, a handy C-64 disk utility for making custom disks on the 1541 and 1571 disk drives, lets you perform the following three functions:

1. Hides the directory. Files can be read from the disk, but the filenames cannot be displayed.
2. Changes the disk so that LOAD "*",8,1 appears whenever you try to list the directory. You'll find this handy for disks requiring the user to load only the first file listed in the directory.
3. Changes the disk name. This can be used after option 1 or 2 above to render a directory readable again.

After loading and running the program, use a non-essential work disk to test the program. You'll enjoy making fancy disks with this utility.

```

0 REM HEADER MANIPULATOR - ERICK CANTU PAZ :REM*94
10 POKE53280,0:POKE53281,0:PRINT"{SHFT CLR }{CTRL 9}{CTRL 8}{11 SPACES}HEADER MANIPULATOR{11 SPACES}" :REM*176
20 A$=CHR$(141)+"L{SHFT O}"+CHR$(34)+"*"+CHR$(34)+"",8,1+CHR$(145)+CHR$(145) :REM*22
30 A$=A$+CHR$(0)+CHR$(0)+CHR$(0) :REM*195
40 OPEN7,8,15,"I":OPEN8,8,8,"#":OPEN1,0 :REM*180
50 PRINTTAB(45)"1) VANISH DIRECTORY" :REM*185
60 PRINTTAB(45)"2) CHANGE TO ";MID$(A$,2,9) :REM*157
70 PRINTTAB(45)"3) CHANGE NAME":GOSUB170 :REM*148
80 PRINTTAB(85)"MAKE A SELECTION : "; :REM*253
90 INPUT#1,O$:O=VAL(O$):ONOGOTO100,130,110 :GOTO80 :REM*110
100 A$=CHR$(20)+CHR$(20)+CHR$(20)+CHR$(0)+CHR$(0)+CHR$(0):GOTO130 :REM*137
110 PRINTTAB(85)"NEW NAME :";:INPUT#1,A$:PRINT :REM*146
120 FORX=1 TO 16-LEN(A$):A$=A$+CHR$(160):NEXT :REM*37
130 PRINT#7,"B-P";8;144:PRINT#8,A$; :REM*196

```

```

140 PRINT#7,"B-W";8;0;18;0 :REM*2
150 INPUT#7,E,E$,T,S:PRINTTAB(85)"DISK STATUS :E;E$;T;S :REM*92
160 CLOSE8:PRINT#7,"I0":CLOSE7:END:REM*172
170 PRINT#7,"U1";8;0;18;0:PRINTTAB(85)"CTRL 9"; :REM*233
180 PRINT#7,"B-P";8;144:FORH=1 TO 23:GET#8,D$:PRINTD$;:NEXT:PRINT:RETURN :REM*152

```

—ERICK CANTU PAZ, MEXICO CITY, MEXICO

\$552 PRINT SPEED 64

Controlling print speed to the screen is easy with Print Speed 64. After typing and running this short machine language program, enter POKE 2,X to control the print speed, where X ranges from 0 (fastest) to 255 (slowest). Incorporate this handy utility into your programs for attention-getting effects.

```

0 REM PRINT SPEED - ERICK CANTU PAZ:REM*88
10 FORJ=0 TO 35:READB:POKE828+J,B:NEXT :REM*85
20 SYS828 :REM*154
30 DATA 169,3,141,39,3,169,71,141,38,3,96,72,138,72,152,72,166,2,240,8,160 :REM*219
40 DATA 0,136,208,253,202,208,250,104,168,104,170,104,76,202,241 :REM*1

```

—ERICK CANTU PAZ, MEXICO CITY, MEXICO

\$553 TWO 80-COLUMN SCREENS

In both the 16K and 64K video RAM versions of the C-128, there's enough free memory to display two independent screens. My program, Two 80-Column Screens, consists of the minimal Basic code needed to make a second 80-column text screen.

The first line of code activates the second independent screen and places some text in it. The second line restores the original screen. Play around with the program and you'll find that an almost infinite number of possibilities exist for putting this routine to use in your own programs.

```

0 REM TWO 80-COLUMN SCREENS - PETER M. L. LOTTRUP :REM*38
10 SYSDEC("CDCC"),16,12:SYSDEC("CDCC"),0,13:SYSDEC("CDCC"),24,20:SYSDEC("CDCC"),0,21:POKE 2606,16:POKE 2607,24:SCNCLR :REM*25
20 COLOR6,7:PRINT"THIS IS THE ALTERNATE 80-COL. SCREEN":PRINT"PRESS A KEY TO RETURN TO DEFAULT SCREEN...":GETKEYA$ :REM*40
30 SYSDEC("CDCC"),0,12:SYSDEC("CDCC"),0,13:SYSDEC("CDCC"),8,20:SYSDEC("CDCC"),0,21:POKE 2606,0:POKE 2607,8:COLOR 6,1 :REM*5

```

—PETER LOTTRUP, BUENOS AIRES, ARGENTINA

\$554 PROFESSIONAL MENUS

Eliminate boring Basic menus by using my Professional Menu 64/128 to add the appeal of a mouse-based point-and-

MAGIC

click menu to even the simplest of your own programs. Best of all, no mysterious machine language or sprite drivers are used. In fact, you don't even need a mouse! Just use the cursor keys to move the pointer and the return key to make your selection.

```

Ø REM PROFESSIONAL MENU 64/128 - J.E. REUT
ER                                     :REM*107
1Ø J=1:PRINTCHR$(147)                 :REM*36
2Ø PRINT"{SHFT CLR}{COMD A}{6 SHFT *s}{COM
D R}{6 SHFT *s}{COMD R}{6 SHFT *s}{COMD
R}{6 SHFT *s}{COMD R}{6 SHFT *s}{COMD
S}"                                  :REM*140
3Ø PRINT"{SHFT -}{1.{4 SPACES}{SHFT -}{2.{4
SPACES}{SHFT -}{3.{4 SPACES}{SHFT -}{4.{4
SPACES}{SHFT -}{5.{4 SPACES}{SHFT -}"
                                     :REM*151
4Ø PRINT"{COMD Z}{6 SHFT *s}{COMD E}{6 SHF
T *s}{COMD E}{6 SHFT *s}{COMD E}{6 SHFT
*s}{COMD E}{6 SHFT *s}{COMD X}" :GOSUB1
ØØ                                     :REM*91
5Ø GETA$:IF(A$<>){CRSR RT}"ANDA$<>{CRSR L
F}"ANDA$<>CHR$(13)}THEN5Ø           :REM*182
6Ø IFA$="{CRSR RT}"THENJ=J+1:IFJ=6THENJ=1
                                     :REM*223

```

```

7Ø IFA$="{CRSR LF}"THENJ=J-1:IFJ=ØTHENJ=5
                                     :REM*208
8Ø IFA$=CHR$(13)THEN14Ø:REM ON J GOTO/GOSU
B GOES HERE                           :REM*25
9Ø GOSUB1ØØ:GOTO5Ø                   :REM*237
1ØØ PRINTCHR$(14):FORX=1TO5:IFJ=XTHENA$(X)
="{SHFT @}"                             :REM*48
11Ø IFJ<>XTHENA$(X)=" "               :REM*125
12Ø NEXT:P$="":FORX=1TO5:P$=P$+"{SHFT -}{5
CRSR RTs}" +A$(X):NEXT                :REM*242
13Ø P$=P$+"{SHFT -}":PRINT"{HOME}{CRSR DN}
"P$:RETURN                               :REM*74
14Ø PRINT"{4 CRSR DNs}{SHFT I}TEM"J"WAS SE
LECTED.":FORX=1TO1ØØØ:NEXT:RUN :REM*95

```

—JEROME E. REUTER, MONCKS CORNER, SC ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

St. Louis



Hawaii



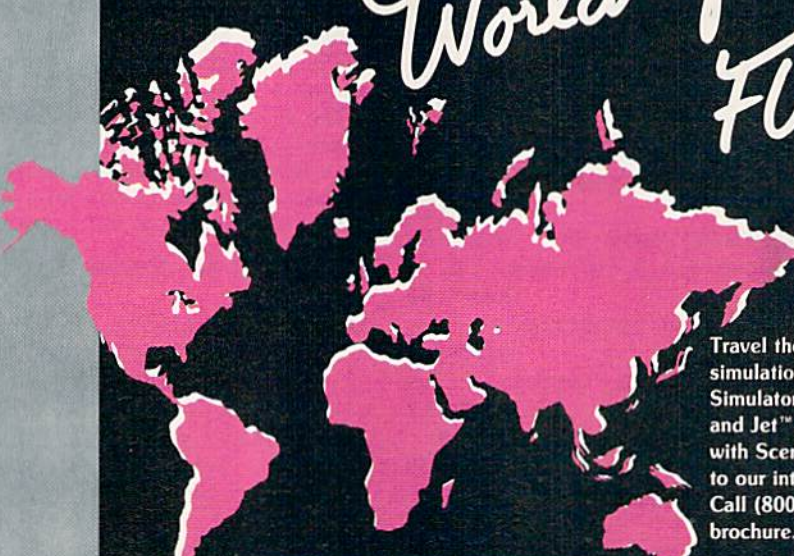
Paris



Tokyo



World of Flight



Travel the globe with the best in simulation software; Flight Simulator™, Stealth Mission™, and Jet™. Discover the world with Scenery Disk supplements to our integrated flight line! Call (800) 637-4983 for our new brochure.



Flight Simulator, Stealth Mission, and Jet are trademarks of SubLOGIC Corp. IBM screens shown. Other computer versions may vary.

subLOGIC

GEOS Breakthrough—80-Column Color Arcade!

RUN

THE COMMODORE 64/128 USER'S GUIDE

October 1989
An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

Sneak Previews Of New Games

Special Reviews:
Educational Software
Terminal Programs

PLUS!

- ▶ Maze Run
- ▶ 3-D Surfaces on Your 128
- ▶ Redefine 64 Function Keys
- ▶ And More



MAGIC

A pumpkin, 80-column characters and a whirling-dervish effect for the C-64 are but a sampling of the pure graphics bonanza in this month's Magic!

Compiled by TIM WALSH

\$555 IT'S THE GREAT PUMPKIN, CHARLIE BROWN!

Just in time for trick-or-treat season, *RUN* readers can prepare for Halloween by typing in C-64 Halloween Treat. The glowing, spooky pumpkin will delight children of all ages. Set your computer monitor in a window so that little ghosts and goblins can see it as they make their neighborhood rounds.

```
Ø REM C-64 HALLOWEEN TREAT - KURT EHRLAND
:REM*245
1Ø FOR T=832 TO 894:READA:CK=CK+A:POKE T,A
: NEXT:PRINTCHR$(147)
:REM*33
2Ø IF CK <> 6719 THENPRINT "ERROR IN DATA
":END
:REM*22
3Ø CK=Ø:FOR T=49151 TO 49198:READ B:CK=CK+B
:POKE T,B:NEXT
:REM*3
4Ø IF CK <> 5Ø58 THENPRINT"ERROR IN DATA":
END
:REM*5Ø
5Ø B=53248:POKEB+21,1:POKE2Ø4Ø,13:POKEB+39
,8:POKEB+38,Ø:POKE B+27,1
:REM*145
6Ø POKE B,163:POKE B+1,12Ø:POKE B+23,1:POK
E B+29,1:POKE B+32,Ø:POKE B+33,Ø:REM*51
7Ø SYS 49152:POKE 646,15:POKE B+28,1:POKE
B+37,5
:REM*55
8Ø DATA Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,5,Ø,Ø,2Ø,Ø,Ø,8
Ø,Ø,2,17Ø,Ø,1Ø,17Ø,128,42,17Ø,16Ø
:REM*188
9Ø DATA 17Ø,17Ø,168,171,171,168,175,171,23
2,17Ø,186,168,17Ø,186,168,17Ø,17Ø
:REM*121
1ØØ DATA 168,19Ø,238,248,175,255,232,17Ø,2
54,168,42,17Ø,16Ø,1Ø,17Ø,128,Ø,Ø,Ø
:REM*1Ø5
11Ø DATA Ø,12Ø,169,15,141,2Ø,3,169,192,141
,21,3,16Ø,Ø,88,96,174,Ø,193,232:REM*9Ø
12Ø DATA 142,Ø,193,224,4,176,8,169,7,141,3
8,2Ø8,76,49,234,169,Ø,141,38,2Ø8
:REM*2Ø2
13Ø DATA 17Ø,142,Ø,193,76,49,234,32
:REM*126
```

—KURT EHRLAND, PHOENIXVILLE, PA

\$556 Two C-64 Screens

After you type in, save and run Two C-64 Screens, you get just that—two independent 40-column screens displayed on the C-64. Just press the Commodore and control keys at the same time to toggle between the two screens. You can execute commands from each screen, display notes or di-

rectories on an unused screen, and find many uses for putting this interesting and unique technique to work within your own programs.

```
Ø REM TWO C-64 SCREENS - DAVE PAMPREEN
:REM*158
1Ø FOR T= 49152 TO 49266:READ D:POKE T,D:C
K=CK+D:NEXT
:REM*72
2Ø IF CK <> 14792 THEN PRINT"ERROR IN DATA
...":END
:REM*41
3Ø SYS 49152:FOR A =52224 TO 53224:POKE A,
32:NEXT
:REM*5Ø
4Ø DATA 162,1Ø6,16Ø,192,142,2Ø,3,14Ø,21,3,
96,76,49,234,174,141,2,224,6
:REM*1Ø2
5Ø DATA 2Ø8,246,162,Ø,189,Ø,4,188,Ø,2Ø4,15
7,Ø,2Ø4,152,157,Ø,4,189,2ØØ,4
:REM*228
6Ø DATA 188,2ØØ,2Ø4,157,2ØØ,2Ø4,152,157,2Ø
Ø,4,189,144,5,188,144,2Ø5,157
:REM*14Ø
7Ø DATA 144,2Ø5,152,157,144,5,189,88,6,188
,88,2Ø6,157,88,2Ø6,152,157,88,6:REM*219
8Ø DATA 189,32,7,188,32,2Ø7,157,32,2Ø7,152
,157,32,7,232,224,2ØØ,2Ø8,186
:REM*4Ø
9Ø DATA 32,159,255,174,141,2,224,6,24Ø,246
,76,11,192,166,2Ø7,224,Ø,2Ø8
:REM*52
1ØØ DATA 155,76,14,192
:REM*91
```

—DAVE PAMPREEN, BELLEVILLE, MI

\$557 80-COLUMN C-64 CHARACTERS

A bit-mapped graphics screen, such as GEOS, used to be the only easy way to display 80-column characters on the C-64's 40-column screen. My Magic trick, 40 Into 80, solves that problem by creating a 20-block sequential file with 40-column characters that are half their normal width. When run, 40 Into 80 also shrinks any characters on the screen into half their size.

Clever and ambitious programmers can use the sequential file of half-width characters to create an 80-column screen editor for putting those characters to use. The *C-64 Programmer's Reference Guide* is an excellent source of information for performing such a feat.

```
Ø REM 4Ø INTO 8Ø - JAY TAPLIN
:REM*151
1Ø PRINT"ABCDEFGHIJKLMNPOQRSTUVWXYZ,./:;12
3456789Ø+~"
:REM*9
2Ø DIMY(512):OPEN2,8,2,"@Ø:CHARADATA,S,W"
:REM*139
3Ø POKE52,48:POKE56,48
:REM*58
4Ø POKE56334,PEEK(56334)AND254
:REM*193
5Ø POKE1,PEEK(1)AND251
:REM*56
6Ø FORI=ØTO511:Y(I)=PEEK(I+53248):NEXT
```


MAGIC

```

:REM*185
70 POKE1, PEEK(1) OR 4 :REM*35
80 POKE56334, PEEK(56334) OR 1 :REM*171
90 POKE53272, (PEEK(53272) AND 240) + 12 :REM*4
100 FORQW=1 TO 2: Z=128: IFQW=2 THEN GOSUB 210 :REM*128
:REM*128
110 FORR=0 TO 511: N=C=0: T=Z: Q=64: W=Y(R-N):
D=1: FORJ=0 TO 7 :REM*189
120 IFD=1 THEN D=2: GOTO 140 :REM*19
130 IFD=2 THEN D=1 :REM*187
140 IFJ=7 THEN GOTO 190 :REM*234
150 IFQ>WANDD=1 THEN Q=Q/2: T=T/2: NEXTJ: NEXTR:
GOTO 210 :REM*165
160 IFQ>WANDD=2 THEN Q=Q/2: NEXTJ: NEXTR: END
:REM*100
170 IFD=2 THEN C=C: W=W-Q: Q=Q/2: NEXTJ, R: END
:REM*15
180 IFD=1 THEN C=C+T: W=W-Q: Q=Q/2: T=T/2: NEXTJ:
NEXT :REM*211
190 POKER+12288, C: PRINT#2, C: NEXTJ: NEXTR: NE
XTQW: CLOSE2 :REM*247
200 END :REM*73
210 Z=8: N=512: RETURN :REM*251

```

—JAY TAPLIN, HAMPDEN, ME

\$558 20-COLUMN C-64 CHARACTERS

Residing at the other end of the C-64 screen spectrum is 40 Into 20, which creates screen characters twice as wide as the normal 40-column characters. A simple screen editor is built into this program to support the double-wide characters, which are not displayed by the standard 40-column screen editor.

To exit 40 Into 20, enter POKE 56576, (PEEK(56576) AND 252) + 3: POKE 648, 4. Pressing run-stop/restore will exit the program, but it also locks up the screen. Just enter POKE 648, 4 to unlock the screen.

```

0 REM 40- INTO 20-COLUMNS - DAVID FICKEN :REM*56
10 REM SYS49152 ACTIVATES NEW CHSET :REM*226
20 FORI=49152 TO 49431: READA: POKEI, A: X=X+A: N
EXT :REM*157
30 IFX<>34524 THEN PRINT "ERROR IN DATA": END
:REM*139
40 SYS49152 :REM*214
50 DATA 173, 0, 221, 41, 252, 170, 232, 232, 142, 0
, 221, 169, 68, 141, 136, 2, 169, 0, 133: REM*210
60 DATA 253, 133, 251, 169, 208, 133, 252, 169, 80
, 133, 254, 160, 0, 169, 210, 141, 60, 3: REM*249
70 DATA 32, 63, 192, 169, 0, 133, 253, 133, 251, 16
9, 212, 133, 252, 169, 82, 133, 254 :REM*75
80 DATA 169, 214, 141, 60, 3, 32, 63, 192, 96, 169,
0, 141, 14, 220, 169, 51, 133, 1, 177 :REM*137
90 DATA 251, 141, 23, 193, 169, 55, 133, 1, 169, 1,
141, 14, 220, 32, 127, 192, 24, 165 :REM*187
100 DATA 251, 105, 1, 133, 251, 165, 252, 105, 0, 1
33, 252, 24, 165, 253, 105, 1, 133, 253
:REM*122
110 DATA 165, 254, 105, 0, 133, 254, 165, 251, 208
, 200, 165, 252, 205, 60, 3, 208, 193, 96

```

```

:REM*77
120 DATA 169, 0, 141, 21, 193, 141, 22, 193, 173, 2
3, 193, 41, 128, 240, 8, 173, 21, 193, 9
:REM*104
130 DATA 192, 141, 21, 193, 173, 23, 193, 41, 64, 2
40, 8, 173, 21, 193, 9, 48, 141, 21, 193
:REM*130
140 DATA 173, 23, 193, 41, 32, 240, 8, 173, 21, 193
, 9, 12, 141, 21, 193, 173, 23, 193, 41 :REM*41
150 DATA 16, 240, 8, 173, 21, 193, 9, 3, 141, 21, 19
3, 173, 23, 193, 41, 8, 240, 8, 173, 22: REM*101
160 DATA 193, 9, 192, 141, 22, 193, 173, 23, 193, 4
1, 4, 240, 8, 173, 22, 193, 9, 48, 141, 22
:REM*76
170 DATA 193, 173, 23, 193, 41, 2, 240, 8, 173, 22,
193, 9, 12, 141, 22, 193, 173, 23, 193 :REM*37
180 DATA 41, 1, 240, 8, 173, 22, 193, 9, 3, 141, 22,
193, 173, 21, 193, 145, 253, 165, 254: REM*244
190 DATA 72, 24, 105, 4, 133, 254, 173, 22, 193, 14
5, 253, 104, 133, 254, 96, 255, 255, 255
:REM*54
200 PRINT "{SHIFT CLR}{CTRL 2}{7 CRSR DNs}"
:REM*202
210 FORI=0 TO 127: POKE17408+I*2, I: POKE17408+
I*2+1, I+128: NEXT :REM*91
220 PRINT CHR$(160) CHR$(160) "{2 CRSR LFs}";
: GETA$: IFA$="" THEN 220 :REM*82
230 PRINT "{2 SPACES}{2 CRSR LFs}" A$ CHR$(18
) A$ CHR$(146) : GOTO 220 :REM*154

```

—DAVID M. FICKEN, TOPSAIL, Nfld., CANADA

\$559 WHIRLING DERVISH 64

Set your entire text screen whirling with Whirling Dervish 64, a short machine utility that provides a truly spectacular animation effect. Just type in and save the program, run it, and enter SYS 49152 to activate it. Entering SYS 49155 stops the action, should you want to give your eyes a rest.

```

0 REM WHIRLING DERVISH 64 - JEFFREY PANICI :REM*73
10 PRINT CHR$(147) "CHECKING DATA"; CK=.: S=4
9152: FORX=STOS+190: READD: CK=CK+D
:REM*242
20 POKE X, D: PRINT ".": NEXT: IF CK<>16666 THEN P
RINT "ERROR!!!": END :REM*229
30 PRINT "{CRSR DN} SYS 49152 TO START EFFEC
T": PRINT "SYS 49155 TO STOP": END :REM*3
40 DATA 76, 49, 192, 76, 112, 192, 0, 0, 1, 2, 3, 4, 5
, 6, 7, 7, 7, 7, 6, 5, 4, 3, 2, 1, 0, 0, 0, 4: REM*50
50 DATA 5, 6, 7, 7, 7, 6, 5, 4, 3, 2, 1, 0, 0, 0, 1,
2, 3, 4, 120, 169, 88, 141, 20, 3, 169, 192
:REM*25
60 DATA 141, 21, 3, 169, 1, 141, 26, 208, 169, 0, 14
1, 18, 208, 173, 17, 208, 41, 119, 141, 17
:REM*237
70 DATA 208, 173, 22, 208, 41, 247, 141, 22, 208, 8
8, 96, 173, 25, 208, 41, 1, 240, 11, 169, 1
:REM*172
80 DATA 141, 25, 208, 32, 150, 192, 76, 49, 234, 10
4, 168, 104, 170, 104, 64, 120, 169 :REM*69

```


MAGIC

```
90 DATA 128,141,26,208,169,49,141,20,3,169
,234,141,21,3,173,22,208,41,240:REM*106
100 DATA 9,8,141,22,208,173,17,208,41,240,
9,11,141,17,208,88,96,174,6,192
:REM*253
110 DATA 173,22,208,41,248,29,7,192,141,22
,208,173,17,208,41,248,29,28,192
:REM*133
120 DATA 141,17,208,238,6,192,173,6,192,20
1,21,144,5,169,0,141,6,192,96:REM*212
```

—JEFFREY D. PANICI, SANDWICH, IL

\$55A MOVIE FADE 64/128

When you've finished enjoying Whirling Dervish 64, above, try Movie Fade 64/128. As its name implies, this C-64 and C-128 (40- and 80-Column modes) utility makes screen text fade out as in opening movie credits. Also try running Whirling Dervish 64 with Movie Fade 64/128 to create dynamic special effects. Even Steven Spielberg couldn't draw more attention to your program!

```
0 REM MOVIE FADE 64/128 - JEFFREY PANICI
:REM*205
10 PRINTCHR$(147):POKE53281,,:POKE53280,,:
PRINT"{9 CRSR DNs}" :REM*51
20 A$="RUN MAGAZINE PRESENTS":GOSUB80:A$="
MOVIE FADE 64 & 128":GOSUB80 :REM*33
30 A$="MAGIC COLUMIST":GOSUB80 :REM*57
40 A$="{CTRL 9}TIM WALSH{CTRL 0}":GOSUB80
:REM*87
50 A$="THIS PROGRAM WAS WRITTEN BY":GOSUB80
0:A$="{CTRL 9}JEFFREY D. PANICI{CTRL 0}
":GOSUB80 :REM*73
55 A$="PRODUCED BY":GOSUB80:A$="{CTRL 9}ID
G COMMUNICATIONS/PETERBOROUGH{CTRL 0}":
GOSUB80 :REM*107
56 A$="EDITED BY":GOSUB80:A$="{CTRL 9}HARO
LD R.BJORNSEN{CTRL 0}":GOSUB80 :REM*133
57 A$="DIRECTED BY":GOSUB80:A$="{CTRL 9}{C
TRL 8}SWAIN PRATT{CTRL 0}":GOSUB80
:REM*74
60 GOTO20 :REM*184
70 REM FADER ROUTINE :REM*219
80 FORX=1TO40:NEXT:CL$="{CTRL 1}{CTRL 7}{C
OMD 7}{CMD 6}{CTRL 4}{CTRL 2}":TB=(40-
(LEN(A$)))/2 :REM*157
90 FORX=1TO6:C$=MID$(CL$,X,1):PRINTTAB(TB)
;C$;A$;"{CRSR UP}":NEXT :REM*13
100 FORX=1TO2000:NEXT :REM*60
110 FORX=6TO1STEP-1:C$=MID$(CL$,X,1):PRINT
TAB(TB);C$;A$;"{CRSR UP}":NEXT:REM*156
120 FORP=1TO500:NEXT:RETURN :REM*226
```

—JEFFREY D. PANICI, SANDWICH, IL ■

If you have an idea for a way to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

New
Release!

Version 6.0

The first in a new series of integrated C64/C128 hardware products from CMD

JiffyDOS™

Give your system a new lease on life and the power to compete with today's newer, more expensive machines

- **Ultra-fast multi-line serial technology.** Enables JiffyDOS to outperform Cartridges, Burst ROMs, Turbo ROMs, and Parallel Systems – without any of the disadvantages.
- **Speeds up all disk operations.** Load, Save, Format, Scratch, Validate, access PRG, SEQ, REL, USR & direct-access files up to 15 times faster!
- **100% Compatible – or your money back.** Guaranteed to work with all your hardware and software, including copy-protected commercial programs.
- **Uses no ports, memory or extra cabling.** The JiffyDOS ROMs upgrade your computer and drive(s) internally for maximum speed and compatibility.
- **Easy Installation.** No electronics experience or special tools required.
- **Supports C64, 64C, SX64, C128, C128D, 1541, 1541C, 1541-II, 1571, 1581 and more**
- **Can be completely switched out.** If ever necessary, the flip of a switch returns you to a 100% stock configuration – without resetting or powering down.
- **Built-in DOS Wedge.** Plus 17 additional commands and convenience features, including file copier, screen dump, directory menu, and single-key load/save/scratch.

C-64/SX-64 systems \$59.95; C-128/C-128D systems \$69.95; Add'l drive ROMs \$29.95
Please specify computer (with serial number) and drive(s) when ordering

System includes ROMs for computer and one drive, User's Manual, illustrated step-by-step installation instructions, 30-day money-back compatibility guarantee and 90-day parts warranty. Add \$4.25 shipping/handling per order, plus \$3.00 for C.O.D., A.P.O., F.P.O., AK, HI, PR & Canada. \$10.00 add'l for other overseas orders. MA residents add 5% sales tax. VISA/MC, COD, Check, Money Order. Allow 2 weeks for personal checks. U.G. & Dealer pricing available. Call or write for more information.

• Version 5.0 owners call for upgrade information and prices •

Circle 166 on Reader Service card.

JiffyDOS™ Version 6.0

New Features and Enhancements

- **Built-in two drive file copier.** Copies PRG, SEQ, REL and most USR files between two drives of any type or to and from RAM Expansion Units. Great for making quick backups and transferring programs and files between 1541, 1571 & 1581 drives. Directory menu, two-key commands, and Control-key combinations enable quick, easy selection of source and destination drives and the files that you want to copy. Can also be used to change filetypes (PRG to SEQ, SEQ to PRG, etc.).
- **REU support.** The JiffyDOS commands now fully support Commodore RAM Expansion Units running under RAMDOS. Access your REU just like a disk drive without having to load special wedge utilities.
- **1581 support.** Copy programs and files from 1541 and 1571 drives to any partition on your 1581. Move between partitions easily with just a few keystrokes.
- **Quick printer output toggle.** A simple 3-key command switches output from screen to printer and back with ease. Eliminates the bother of having to type the complicated OPEN4,4:CMD4 and PRINT#4:CLOSE4 command sequences.
- **Redefinable 64-mode function keys.** If the JiffyDOS function keys are not to your liking, you can easily redefine them to suit your specific needs.
- **Enhanced screen dump.** Automatic screen mode recognition and printing of uppercase/graphics & lowercase characters.
- **Adjustable sector interleaving.** Enables you to increase disk-access performance even with hard-to-speedup software.

CMD

Creative Micro Designs, Inc.

50 Industrial Drive, PO Box 646 Phone: 413-525-0023
East Longmeadow, MA 01028 FAX: 413-525-0147

RUN

November 1989
An IDGC/I
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

THE **COMMODORE** 64 / 128 USER'S GUIDE

RUN'S TOP PRINTERS How to Buy Smart

14 GAMES
REVIEWED

Discover Q-Link's
Latest Hot Spot!

PLUS!

- Super Fast RUN Copy
- Deluxe Basic 64
- 128 Wall St. Tycoon
- And More!



74470 12069

MAGIC

Performing screen magic and giving you quick access to ASCII equivalents are some of the things this month's tricks provide.

Compiled by TIM WALSH

\$55B C-64 SCREEN ANIMATION

Liven up any C-64 screen display with Animation Lines 64. Unlike other line-scrolling utilities, Animation Lines is interrupt-driven and unaffected by most other computer operations. To activate it after running, just enter SYS 4096. To deactivate it, use SYS 4160. For more dramatic effects, enter POKE 56325,100.

```
Ø REM ANIMATION LINES 64 - JUSTIN REYNOLDS
:REM*217
1Ø FORA=4Ø96TO4173:READX:POKEA,X:CK=CK+X:N
EXTA :REM*42
2Ø IFCK<>81Ø3THENPRINT"DATA ERROR...":END
:REM*27
3Ø PRINT"(SHFT CLR)ENABLE - SYS4Ø96 / DISA
BLE - SYS416Ø" :REM*197
4Ø DATA 76,14,16,162,Ø,169,234,157,Ø,74,23
2,2Ø8,248,96,16Ø,64,14Ø,9,16,32 :REM*28
5Ø DATA 3,16,2ØØ,192,75,2Ø8,245,169,96,141
,Ø,75,12Ø,169,16,141,21,3,169 :REM*14Ø
6Ø DATA 45,141,2Ø,3,88,96,162,Ø,142,32,2Ø8
,142,33,2Ø8,32,Ø,64,232,224,2 :REM*233
7Ø DATA 2Ø8,242,76,49,234,12Ø,169,234,141,
21,3,169,49,141,2Ø,3,88,96,Ø :REM*87
```

—JUSTIN R. REYNOLDS, HOWELL, NJ

\$55C 128 POP-ON SCREENS

Magic Trick \$52A, C-64 Pop-On Screens (May 1989), demonstrates how to make C-64 screens that immediately pop into view. Pop-on screens are remarkably easy in the C-128's 40-Column mode, since switching to Fast mode instantaneously blanks the screen, and Slow mode instantly re-displays the screen.

Making pop-on screens in the C-128's 80-Column mode requires a little more programming knowledge, though. Fortunately, the 80-column VDC has a screen-blanking routine that's activated by entering SYS 52684,0,35. The screen display will instantly re-appear by entering SYS 52684,100,35. I wrote C-128 80-Column Pop-On Screens to demonstrate these commands at work in a simple but effective program.

```
Ø REM 128 8Ø-COLUMN POP-ON SCREEN - AARON
PEROMSIK :REM*35
1Ø GOTO4Ø :REM*138
2Ø SYS 52684,Ø,35:RETURN:REM SCREEN OFF
:REM*152
3Ø SYS 52684,1ØØ,35:RETURN:REM SCREEN ON
:REM*193
4Ø REM START PROGRAM HERE :REM*74
```

```
5Ø FAST:GRAPHIC 5,1:COLOR 5,7 :REM*152
6Ø FOR X= Ø TO 1:IF X=Ø THEN GOSUB 2Ø
:REM*31
7Ø FOR Y= 1 TO 117: PRINT "A POP-ON SCREEN
! ";:NEXT :REM*71
8Ø IF X=Ø THEN WINDOW 32,9,48,11,1:COLOR 5
,4:PRINT"(CRSR DN){2 SPACES}{CTRL 9)PRE
SS ANY KEY":GOSUB 3Ø:GETKEYA$:PRINT"{2
HOMES}":SCNCLR:COLOR 5,7 :REM*118
9Ø NEXT :REM*22Ø
```

—AARON PEROMSIK, WORCESTER, MA

\$55D MAGIC BACKDROP 64

Magic Backdrop, a C-64 screen animator, makes the entire screen, or any part of it, scroll in four directions. The character used for the effect is reverse @ (POKE 128). Here are the numbers needed to use the program:

POKE 2,0 to move left
POKE 2,1 to move right
POKE 2,2 to move up
POKE 2,3 to move down
POKE 2,4 to stop scroll

Speed is controlled by memory address 820, with 0 the fastest speed.

SYS 52224 sets up a new character set.

SYS 52227 starts the smooth scroll determined by address 2

(direction) and 820 (speed).

SYS 52230 disables the utility.

Run the demo below for examples of the above.

```
Ø REM MAGIC BACKDROP 64 - PETER M.L. LOTTR
UP :REM*114
1Ø FORT=52224 TO 5251Ø:READD:POKET,D:CK=CK
+D:NEXT :REM*15Ø
2Ø IF CK <> 34777 THEN PRINT"ERROR IN DATA
...":END :REM*93
3Ø DATA 76,9,2Ø4,76,1Ø8,2Ø4,76,255,2Ø4,169
,8,32,21Ø,255,169,2ØØ,141,136,2 :REM*53
4Ø DATA 169,147,32,21Ø,255,16Ø,Ø,173,24,2Ø
8,2Ø1,23,2Ø8,2,16Ø,1,185,27,2Ø5:REM*157
5Ø DATA 72,169,Ø,141,Ø,221,169,32,141,24,2
Ø8,12Ø,165,1,41,25Ø,133,1,1Ø4 :REM*238
6Ø DATA 133,252,169,Ø,168,133,253,133,251,
169,192,133,254,162,8,177,251 :REM*25Ø
7Ø DATA 145,253,2ØØ,2Ø8,249,23Ø,252,23Ø,25
4,2Ø2,2Ø8,242,165,1,9,7,133,1 :REM*37
8Ø DATA 88,16Ø,Ø,185,29,2Ø5,153,Ø,196,2ØØ,
192,8,144,245,96,96,12Ø,169,121:REM*139
9Ø DATA 141,2Ø,3,169,2Ø4,141,21,3,88,96,23 ▶
```


M A G I C

```

8,53,3,173,53,3,205,52,3,176,3 :REM*255
100 DATA 76,49,234,169,0,141,53,3,173,17,2
    08,16,251,160,0,165,2,208,20,185
                                :REM*21
110 DATA 0,196,24,10,144,2,9,1,153,0,196,2
    00,192,8,144,239,76,49,234,201,1
                                :REM*158
120 DATA 208,20,185,0,196,24,74,144,2,9,12
    8,153,0,196,200,192,8,144,239,76
                                :REM*27
130 DATA 49,234,201,2,208,25,185,0,196,72,
    200,185,0,196,136,153,0,196,200
                                :REM*162
140 DATA 200,192,8,144,243,104,141,7,196,7
    6,49,234,201,4,240,24,173,7,196
                                :REM*111
150 DATA 72,160,6,185,0,196,200,153,0,196,
    136,136,16,245,104,141,0,196,76:REM*74
160 DATA 49,234,76,49,234,169,27,141,0,221
    ,169,21,141,24,208,169,4,141,136
                                :REM*114
170 DATA 2,120,169,234,141,21,3,169,49,141
    ,20,3,88,96,208,216,255,129 :REM*14
180 POKE53280,0:POKE53281,6:SYS52224
                                :REM*107
190 PRINT"{SHFT CLR}{CTRL 1}";:POKE820,2:P
    OKE2,4 :REM*19
200 GOSUB460 :REM*28
210 PRINT"{HOME}{CTRL 0}";:POKE2,2 :REM*56
220 DIM V$(24):V$(0)="{HOME}":FORI=1TO24:V
    $(I)=V$(I-1)+"{CRSR DN}":NEXT :REM*192
230 D$="":FORI=1TO16:D$=D$+"{CRSR RT}":NEX
    T :REM*241
240 E$=LEFT$(D$,15):F$=LEFT$(D$,10)
                                :REM*192
250 B$="{SHFT -}{17 SPACES}{SHFT -}":GOSUB
    430 :REM*219
260 PRINTV$(12)TAB(13)"{CTRL 9}MAGIC BACKD
    ROP" :REM*252
270 SYS52227:GOSUB490 :REM*197
280 GOSUB430:PRINTV$(12)TAB(18)"{CTRL 9}UP
    !":GOSUB490:GOSUB430:POKE2,3 :REM*234
290 PRINTV$(12)TAB(17)"{CTRL 9}DOWN!":GOSU
    B490:GOSUB430:POKE2,0 :REM*82
300 PRINTV$(12)TAB(17)"{CTRL 9}LEFT!":GOSU
    B490:GOSUB430:POKE2,1 :REM*190
310 PRINTV$(12)TAB(17)"{CTRL 9}RIGHT!":GOS
    UB490:POKE2,0 :REM*12
320 POKE2,2:B=2 :REM*175
330 FORI=1TO5:READA:POKE820,A:B=B+1:IFB>3T
    HENB=0 :REM*210
340 DATA15,7,3,2,0 :REM*255
350 POKE2,B:GOSUB490:NEXT :REM*6
360 POKE2,4:FORI=49520TOI+7:POKEI+656,PEEK
    (I):NEXT:POKE2,2 :REM*148
370 PRINTV$(11)E$"{CTRL 9}(R)ESTART"
                                :REM*171
380 PRINTV$(12)E$"{CTRL 9}{9 SPACES}"
                                :REM*124
390 PRINTV$(13)E$"{CTRL 9}(E)ND{2 SPACES}"
                                :REM*217
400 GETA$:IFA$="R"THENRUN :REM*161
410 IFA$<>"E"THEN400 :REM*83
420 SYS52230:PRINT"{SHFT CLR}":END :REM*59
430 PRINTV$(9)F$"{COMD 8}{CTRL 9}{COMD A}{
    17 SHFT *s}{COMD S}" :REM*153
440 FORI=10TO14:PRINTV$(I)F$"{CTRL 9}"B$:N
    EXT :REM*15
450 PRINTV$(15)F$"{CTRL 9}{COMD Z}{17 SHFT
    *s}{COMD X}":RETURN :REM*245
460 A$="{CTRL 9}":FORI=1TO40:A$=A$+"@":NEX
    T :REM*150
470 FORI=1TO24:PRINTA$;:NEXT:PRINTLEFT$(A$
    ,40);:POKE52199,128:POKE56295,0
                                :REM*221
480 RETURN :REM*108
490 FORDY=1TO1500:NEXT:RETURN :REM*75

—PETER LOTTRUP, BUENOS AIRES, ARGENTINA

$55E THE KEY TO ASCII

Even the most efficient, long-time C-64 programmers can't
commit to memory all of the ASCII equivalents of characters
and control codes. The Key to ASCII eliminates the need
for programmers to check C-64 reference charts and manuals
by displaying the decimal ASCII code of the character most
recently printed to the screen. Consequently, programming
printers and writing advanced Basic programs are made
much easier.

The program responds instantaneously whenever a key is
pressed or a Basic program is run or listed. A colon preceding
the ASCII number in the upper-right corner of the screen
acts as a delimiter, allowing you to use commands such as
Run, List and Save on the top-most screen line without
affecting their functions. The Key to ASCII is enabled with
a SYS 53000 and disabled by pressing the run-stop/restore
key combination.

0 REM C-64 KEY TO ASCII - EDGAR LOSBERG
                                :REM*163
10 FOR M=53000 TO 53083:READ A:CS=CS+A:POK
    E M,A:NEXT :REM*96
20 IF CS <> 9034 THEN PRINT"ERROR IN DATA.
    ..":END :REM*201
30 SYS 53000 :REM*139
40 DATA 120,169,21,141,20,3,169,207,141,21
    ,3,88,96,169,48,141,37,4,141 :REM*247
50 DATA 38,4,141,39,4,169,58,141,36,4,165,
    215,133,251,56,233,200,144,9 :REM*71
60 DATA 133,251,169,50,141,37,4,16,14,165,
    251,56,233,100,144,7,133,251 :REM*150
70 DATA 169,49,141,37,4,162,48,165,251,56,
    233,10,232,176,251,202,142,38 :REM*145
80 DATA 4,24,105,58,141,39,4,76,49,234
                                :REM*28

—EDGAR LOSBERG, HUNTSVILLE, AL

$55F TRULY USEFUL C-128 TRICKS

Four valuable C-128 "tricks" that I use almost daily are
largely unknown to a number of C-128 users, so I'll use
this opportunity to pass them along to my following of Mag-
ic fans.

```


MAGIC

First, the C-128 Basic 7.0's Copy command can easily be enhanced to make multiple copies of a program, sequential or any other file by placing it into a For-Next loop. The syntax for making, say, three copies is as follows:

```
FOR X=1 TO 3: COPY "FILE" TO "FILE" + STR$(X): NEXT
```

Second, the F1 function key can be defined into a single keypress file deletion key by using the following Key definition:

```
KEY 1, SC{Shifted R}+"{3 tabs}"+": "+CHR$(13)+"Y"
```

Just list the directory, place the cursor at the left-most column on the same line as the file to be deleted and press F1. Naturally, any function key can be used in place of F1.

My third C-128 trick is a habit I've adopted after heeding the advice of a number of seasoned C-128 veterans. Whenever I use Basic 7.0 disk commands, I always include the ONU{device#} command to minimize the potential of confusing the two or more disk drives connected to my computer. The significance of doing so is readily apparent to programmers who are aware of disk-sensitive 1541/1571/1581-compatible routines.

For example, DLOAD"filename" becomes DLOAD "filename" ONU8 (ONU9 if loading from device 9); BOOT becomes BOOTONU8; COLLECT becomes COLLECTONU8; and so on. Besides making disk commands easier for both the user and computer to decipher, it further makes programming easier by eliminating the need for the inherently weak use of a comma when loading from a secondary disk drive using a directory displayed on the screen; e.g., BOOT"RUN SHELL",U9: can be entered as BOOT "RUN SHELL"ONU9.

The final trick that I constantly use is the RGR(0) command within C-128 programs to detect whether the computer is running in 40- or 80-Column mode. A value of 5 indicates 80-Column mode, while a value of 0 is returned by 40-Column mode. A sample mode detection line I incorporate into 40-column programs usually appears as:

```
10 IF RGR(0)=5 THEN PRINT "PLEASE SWITCH MONITOR  
TO 40-COLUMN MODE"  
20 PRINT "PRESS A KEY TO CONTINUE. . .":GETKEY$
```

If you need 80-Column mode exclusively, just change RGR(0)=5 in the above statement to RGR(0)<>5.

—TIM WALSH, MAGIC COLUMNIST

\$560 LISTEN TO THE MUSIC

Tired of having a household member constantly telling you to turn down the volume of your computer? If you're using a television or video monitor equipped with headphone jacks, just plug them in. You can then blast your ear drums to a substantial level of permanent hearing loss without disturbing any innocent bystanders. Besides reproducing fantastic music, the sounds generated by all manner of flight simulators never sounded more realistic.

—JOHN McDONALD, PALM BAY, FL ■

If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

**New
Release!**

Version 6.0

The first in a new series of integrated C64/C128 hardware products from CMD

JiffyDOS™

Give your system a new lease on life and the power to compete with today's newer, more expensive machines

- **Ultra-fast multi-line serial technology.** Enables JiffyDOS to outperform Cartridges, Burst ROMs, Turbo ROMs, and Parallel Systems — without any of the disadvantages.
- **Speeds up all disk operations.** Load, Save, Format, Scratch, Validate, access PRG, SEQ, REL, USR & direct-access files up to 15 times faster!
- **100% Compatible — or your money back.** Guaranteed to work with all your hardware and software, including copy-protected commercial programs.
- **Uses no ports, memory or extra cabling.** The JiffyDOS ROMs upgrade your computer and drive(s) internally for maximum speed and compatibility.
- **Easy Installation.** No electronics experience or special tools required.
- **Supports C64, 64C, SX64, C128, C128D, 1541, 1541C, 1541-II, 1571, 1581 and more**
- **Can be completely switched out.** If ever necessary, the flip of a switch returns you to a 100% stock configuration — without resetting or powering down.
- **Built-in DOS Wedge.** Plus 17 additional commands and convenience features, including file copier, screen dump, directory menu, and single-key load/save/scratch.

C-64 SX-64 systems \$59.95; C-128 C-128D systems \$69.95; Add 1 drive ROMs \$29.95
Please specify computer (with serial number) and drive(s) when ordering

System includes ROMs for computer and one drive. User's Manual, illustrated step-by-step installation instructions, 30-day money-back compatibility guarantee and 90-day parts warranty. Add \$4.25 shipping handling per order, plus \$3.00 for C.O.D., A.P.O., F.P.O., AK, HI, PR & Canada. \$10.00 add'l for other overseas orders. MA residents add 5% sales tax. VISA MC, C.O.D., Check, Money Order. Allow 2 weeks for personal checks. U.G. & Dealer pricing available. Call or write for more information.

- **Version 5.0 owners call for upgrade information and prices**

JiffyDOS™ Version 6.0

New Features and Enhancements

- **Built-in two drive file copier.** Copy PRG, SEQ, REL and USR files between two drives of any type or to and from REU's. Great for quick backups and moving programs and files between 1541, 1571 & 1581 drives. Directory menu, two-key commands, and Control-key combinations enable easy selection of source and destination drives and the files you want to copy. Can also be used to change filetypes.
- **REU support.** The JiffyDOS commands now fully support Commodore RAM Expansion Units running under RAMDOS. Access your REU just like a disk drive without having to load special wedge utilities.
- **1581 support.** Copy programs and files from 1541 and 1571 drives to any partition on your 1581. Move between partitions easily with just a few keystrokes.
- **Supports CMD HD Series Hard Drives and RAMLink.** Enhances the performance of CMD's new line of integrated C64/C128 products.
- **Quick printer output toggle.** A simple 3-key command switches output from screen to printer and back with ease. Eliminates the bother of having to type the complicated OPEN4,4:CMD4 and PRINT#4:CLOSE4 command sequences.
- **Redefinable 64-mode function keys.** If the JiffyDOS function keys are not to your liking, you can easily redefine them to suit your specific needs.
- **Enhanced screen dump.** Automatic screen mode recognition and printing of uppercase/graphics & lowercase characters.
- **Adjustable sector interleave.** Enables you to increase disk-access performance even with hard-to-speedup software.



Creative Micro Designs, Inc.

50 Industrial Drive, PO Box 646 Phone: 413-525-0023
East Longmeadow, MA 01028 FAX: 413-525-0147

RUN

THE **COMMODORE** 64 / 128 USER'S GUIDE

December 1989
An IDG
Communications
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

BEST GAMES OF 1989

Readers Choose Their Favorites!

The Dramatic
Search for
**PRODUCTIVITY
SOFTWARE**

PLUS!

- ▶ Create Your Own
3-D BAR GRAPHS
- ▶ C-64 High-Speed Loader
- ▶ GEOS and C-128
Season's Greetings



MAGIC

Protect your programs from prying eyes, save scores of your games and move big chunks of memory instantaneously on your C-64.

Compiled by TIM WALSH

\$561 C-64 CHARACTER COLOR TO CURSOR COLOR CHANGER

One of the most eye-catching routines in the world of C-64 programming also has one of the longest, descriptive names in Magicdom. C-64 Character Color to Cursor Color Changer does just that—it instantly changes all of the characters displayed on the screen to the current cursor color.

A completely relocatable machine language routine, C-64 Character to Cursor Color Changer can be used as a stand-alone program or as a routine within a program. Activating it with its default memory location requires entering SYS 49152 after changing the cursor color with either POKE 646,X or with the control or Commodore keys.

```
0 REM 64 CHARACTER COLOR TO CURSOR COLOR C
  HANGER - LARRY E. SUTTER :REM*111
10 FORT=49152 TO 49200:READ D:POKE T,D:CK=
  CK+D:NEXT :REM*230
20 IF CK<> 7149 THENPRINT"ERROR IN DATA..."
  :END :REM*225
30 PRINT"{SHIFT CLR}ACTIVATE COLOR CHANGE W
  ITH SYS 49152" :REM*43
40 DATA 173,134,2,162,141,142,252,3,162,96
  ,142,255,3,162,216,160,0,142 :REM*192
50 DATA 254,3,140,253,3,32,252,3,200,192,0
  ,240,6,192,232,240,7,208,236 :REM*51
60 DATA 232,224,0,208,231,224,219,240,2,20
  8,225,96 :REM*253
```

—LARRY E. SUTTER, STERLING HEIGHTS, MI

\$562 SCORE KEEPER 64/128

If you're an avid game programmer, you can save the top five scores for your C-64 and C-128 games to disk by incorporating Score Keeper 64/128 into them. If you run the program and don't yet have a score file, it automatically writes a top-five score on the disk for you.

The guidelines to follow when using Score Keeper 64/128 are simple. NM\$ is the current player; the current player's score is the variable SC; the top five scores in line 10 go from highest to lowest; and bear in mind that it won't accept names over 14 characters long.

```
0 REM SCORE KEEPER 64/128 - JERRY DICKSON :REM*44
10 NM$="NO ONE YET!":S1=5:S2=4:S3=3:S4=2:S
  5=1 :REM*254
20 IFLEN(NM$)>14ORLEN(NM$)>14THENPRINT"NAME
  TOO LONG!":RUN :REM*157
30 PRINT"{SHIFT CLR}{CTRL 2}":OPEN 2,8,2,"H
  IGH,S,R":GOSUB280 :REM*89
40 OPEN 2,8,2,"HIGH,S,R" :REM*69
```

```
50 FORL=1TO5:INPUT#2,H(L):INPUT#2,I$(L):NE
  XTL:CLOSE2 :REM*190
60 FORL=1TO5:F(L)=H(L):J$(L)=I$(L):NEXTL
  :REM*204
70 IFSC<F(5)THEN130 :REM*89
80 IFSC>F(1)THENGOSUB230:GOTO130 :REM*109
90 IFSC>F(2)THENGOSUB240:GOTO130 :REM*72
100 IFSC>F(3)THENGOSUB250:GOTO130 :REM*167
110 IFSC>F(4)THENGOSUB260:GOTO130 :REM*130
120 GOSUB270 :REM*204
130 PRINT"{SHIFT CLR}{2 CRSR DNs}";SPC(14)"
  HIGH SCORES":PRINTSPC(14)"{11 COMD Ys}
  ":PRINT :REM*86
140 FORL=1TO5:PRINT"":PRINTTAB(11);I$(L);T
  AB(25);H(L):NEXTL :REM*192
150 OPEN 15,8,15,"S0:HIGH":CLOSE15:REM*156
160 OPEN 2,8,2,"HIGH,S,W":FORL=1TO5:PRINT#
  2,H(L):PRINT#2,I$(L):NEXTL:CLOSE2
  :REM*11
170 PRINT"{2 CRSR DNs}":A$=" PRESS ANY KEY
  TO CONTINUE " :REM*8
180 GETB$:IFB$=""THENGOSUB200:GOTO180
  :REM*102
190 END :REM*63
200 PRINT"{CRSR UP}"TAB(7);"{CTRL 9}";A$:F
  ORP=1TO100:NEXT :REM*106
210 PRINT"{CRSR UP}"TAB(7);"{CTRL 0}";A$:F
  ORP=1TO100:NEXT :REM*123
220 RETURN :REM*107
230 H(1)=SC:I$(1)=N$:FORL=2TO5:H(L)=F(L-1)
  :I$(L)=J$(L-1):NEXTL:RETURN :REM*20
240 H(2)=SC:I$(2)=N$:FORL=3TO5:H(L)=F(L-1)
  :I$(L)=J$(L-1):NEXTL:RETURN :REM*193
250 H(3)=SC:I$(3)=N$:FORL=4TO5:H(L)=F(L-1)
  :I$(L)=J$(L-1):NEXTL:RETURN :REM*247
260 H(4)=SC:I$(4)=N$:H(5)=F(4):I$(5)=J$(4)
  :RETURN :REM*212
270 H(5)=SC:I$(5)=N$:RETURN :REM*148
280 CLOSE2:OPEN 15,8,15:INPUT#15,E,E$:CLOS
  E15:IFE<>0THEN300 :REM*168
290 RETURN :REM*177
300 H(1)=S1:H(2)=S2:H(3)=S3:H(4)=S4:H(5)=S
  5:FORL=1TO5:I$(L)=NM$:NEXTL:RETURN
  :REM*156
```

—JERRY DICKSON, SANDWICH, IL

\$563 1541 DISK DATER

Classify all of your work disks by the year of their creation

New
Release!

Version 6.0

The first in a new series of integrated
C64/C128 hardware products from CMD

JiffyDOS™

Give your system a new lease on life and the power to
compete with today's newer, more expensive machines

- **Ultra-fast multi-line serial technology.** Enables JiffyDOS to outperform Cartridges, Burst ROMs, Turbo ROMs, and Parallel Systems - without any of the disadvantages.
- **Speeds up all disk operations.** Load, Save, Format, Scratch, Validate, access PRG, SEQ, REL, USR & direct-access files up to 15 times faster!
- **100% Compatible - or your money back.** Guaranteed to work with all your hardware and software, including copy-protected commercial programs.
- **Uses no ports, memory or extra cabling.** The JiffyDOS ROMs upgrade your computer and drive(s) internally for maximum speed and compatibility.
- **Easy Installation.** No electronics experience or special tools required.
- **Supports C64, 64C, SX64, C128, C128D, 1541, 1541C, 1541-II, 1571, 1581 and more**
- **Can be completely switched out.** If ever necessary, the flip of a switch returns you to a 100% stock configuration - without resetting or powering down.
- **Built-in DOS Wedge.** Plus 17 additional commands and convenience features, including file copier, screen dump, directory menu, and single-key load/save/scratch.

C-64 SX-64 systems \$59.95; C-128 C-128D systems \$69.95; Add'l drive ROMs \$29.95
Please specify computer (with serial number) and drive(s) when ordering

System includes ROMs for computer and one drive, User's Manual, illustrated step-by-step installation instructions, 30-day money-back compatibility guarantee and 90-day parts warranty. Add \$4.25 shipping/handling per order, plus \$3.00 for C.O.D., A.P.O., F.P.O., A.K., H.I., P.R. & Canada. \$10.00 add'l for other overseas orders. MA residents add 5% sales tax. VISA MC, C.O.D. Check, Money Order. Allow 2 weeks for personal checks. U.G. & Dealer pricing available. Call or write for more information.

- Version 5.0 owners call for upgrade information and prices •

JiffyDOS™ Version 6.0

New Features and Enhancements

- **Built-in two drive file copier.** Copy PRG, SEQ, REL and USR files between two drives of any type or to and from REU's. Great for quick backups and moving programs and files between 1541, 1571 & 1581 drives. Directory menu, two-key commands, and Control-key combinations enable easy selection of source and destination drives and the files you want to copy. Can also be used to change filetypes.
- **REU support.** The JiffyDOS commands now fully support Commodore RAM Expansion Units running under RAMDOS. Access your REU just like a disk drive without having to load special wedge utilities.
- **1581 support.** Copy programs and files from 1541 and 1571 drives to any partition on your 1581. Move between partitions easily with just a few keystrokes.
- **Supports CMD HD Series Hard Drives and RAMLink.** Enhances the performance of CMD's new line of integrated C64/C128 products.
- **Quick printer output toggle.** A simple 3-key command switches output from screen to printer and back with ease. Eliminates the bother of having to type the complicated OPEN4,4:CMD4 and PRINT#4:CLOSE4 command sequences.
- **Redefinable 64-mode function keys.** If the JiffyDOS function keys are not to your liking, you can easily redefine them to suit your specific needs.
- **Enhanced screen dump.** Automatic screen mode recognition and printing of uppercase/graphics & lowercase characters.
- **Adjustable sector interleave.** Enables you to increase disk-access performance even with hard-to-speedup software.

or their updating with 1541 Disk Dater. A C-64 mode program, Disk Dater writes the last two digits of the year to an unused portion of the disk directory where it is prominently displayed each time the directory is listed. It defaults to 89, but prompts you to change that to any year desired.

As with any disk header manipulator program, it is better to be safe than sorry, so use this program carefully. Test it thoroughly on non-essential scratch disks before using, and, to avoid potential problems, don't use it on 1571-formatted disks.

```
0 REM 1541 DISK DATER - RICHARD PENN
                                :REM*106
10 PRINTCHR$(147)CHR$(18)"1541 DISK DATER
   - RICHARD PENN"              :REM*56
20 CLOSE 15:OPEN 15,8,15:PRINT#15,"I0":CLO
   SE2:OPEN2,8,2,"#"            :REM*205
30 PRINT#15,"U1:2,0,18,0":PRINT#15,"B-P:2,
   164"                          :REM*117
40 FOR T=1 TO 3:GET#2,A$:C$=C$+CHR$(ASC(A$+C
   HR$(0))) :NEXT                :REM*41
50 PRINT:PRINT:POKE 212,1:PRINT"PREVIOUS C
   ONTENTS: "C$                  :REM*180
60 POKE 19,1:INPUT"CHANGE TO(8 SPACES): '8
   9{3 CRSR LFS}";N$:POKE 19,0:PRINTN$=LEF
   T$(N$,3)                      :REM*103
70 PRINT#15,"B-P:2,164":PRINT#2,N$;:PRINT#
   15,"U2:2,0,18,0":CLOSE8      :REM*24
80 INPUT#15,ER,ER$:PRINT:PRINT"DISK
   STATUS:"ER;ER$:PRINT#15,"I0":CLOSE15
                                :REM*214
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$564 EFFECTIVE C-64/C-128 PROGRAM PROTECTION

A little-known program protection method allowed by the C-64 and C-128 requires two and four Pokes, respectively, to keep unwanted eyes from scanning your Basic programs.

With the C-64, it's simply a matter of entering the following commands in the proper sequence. When you're ready to save a C-64 program to be encrypted to disk, just enter POKE 2050,0. When the program is re-loaded into the C-64, it won't list or work properly. Just enter POKE 2050,8 to restore the program to pristine condition.

C-128 programs can be protected in a similar manner, but it's a little more complex. First, enter the following two Pokes before saving: POKE 7169,0:POKE 7170,0. To revive the now "dead" C-128 program after reloading it into the computer, enter POKE 7169,36:POKE 7170,28. But unlike the C-64, you're not out of the woods yet. The final step is to enter RENUMBER in Direct mode, which may change the original



Creative Micro Designs, Inc.

50 Industrial Drive, PO Box 646 Phone: 413-525-0023
East Longmeadow, MA 01028 FAX: 413-525-0147

line numbering, but the program will then work fine.

—BRIAN DAVIDSON, POMPANO BEACH, FL

\$565 64/128 CLEAR SCREEN DIRECTORY

C-128/1571 disk drive users, you're not forgotten. Here's a 64/128-compatible Magic Trick that clears the screen in any mode whenever the directory is listed. Just format a new disk with either a 1541 or 1571 (even a 1581!) using the following technique:

```
OPEN 15,8,15,"N0:"+CHR$(13)+CHR$(147)+
CHR$(18)+CHR$(34)+"diskname.id":CLOSE15
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$566 64 RAM CACHE

Move large chunks of data instantly on your C-64 with 64 RAM Cache. This relocatable machine language program can move memory from either Direct or Program mode. The required syntax for a memory movement after running 64 RAM Cache is straightforward using this format:

```
SYS 49152,S,E,L
```

where S is the starting address of the memory to be moved, E is the ending address and L is the starting address of the new location.

```
Ø REM 64 RAM CACHE - DAVID FICKEN :REM*156
1Ø FORI=49152TO49239:READA:POKEI,A:X=X+A:N
EXT :REM*43
2Ø IFX<>14313THENPRINT"ERROR IN DATA..." :E
ND :REM*1Ø7
3Ø DATA 32,253,174,32,138,173,32,247,183,1
32,251,133,252,32,253,174,32 :REM*42
4Ø DATA 138,173,32,247,183,14Ø,254,2Ø7,141
,255,2Ø7,32,253,174,32,138 :REM*163
5Ø DATA 173,32,247,183,132,253,133,254,16Ø
,Ø,177,251,145,253,24,165,251 :REM*54
6Ø DATA 1Ø5,1,133,251,165,252,1Ø5,Ø,133,25
2,24,165,253,1Ø5,1,133,253 :REM*43
7Ø DATA 165,254,1Ø5,Ø,133,254,165,251,2Ø5,
254,2Ø7,2Ø8,219,165,252,2Ø5 :REM*159
8Ø DATA 255,2Ø7,2Ø8,212,96 :REM*244
```

—DAVID M. FICKEN, TOPSAIL, NFLD., CANADA

\$567 64 LINES AND BYTES

Are you curious about exactly how many keystrokes it took you to type in finger blister-inducing programs such as RUN Paint (March 1989) or RUN Shell (July 1989)? Just load and run this C-64 mode program called 64 Lines and Bytes, then load the Basic program or loader of choice and enter SYS 49152 in Direct mode.

The first number that appears is the number of lines in the program, and the second number is the number of bytes, or characters, contained in the listing.

```
Ø REM 64 LINES & BYTES - DAVID FICKEN :REM*145
1Ø FORI=49152TO49252:READA:POKEI,A:X=X+A:N
EXT :REM*227
2Ø IFX<>16253THENPRINT"ERROR IN DATA..." :E
ND :REM*149
```

```
3Ø DATA 16Ø,Ø,177,43,133,251,2ØØ,177,43,13
3,252,169,Ø,141,254,2Ø7,141 :REM*12
4Ø DATA 255,2Ø7,16Ø,Ø,165,251,2Ø8,4,165,25
2,24Ø,39,165,251,133,253,165 :REM*167
5Ø DATA 252,133,254,24,173,254,2Ø7,1Ø5,1,1
41,254,2Ø7,173,255,2Ø7,1Ø5,Ø :REM*1Ø9
6Ø DATA 141,255,2Ø7,177,251,72,2ØØ,177,251
,133,252,1Ø4,133,251,76,19 :REM*2Ø
7Ø DATA 192,174,254,2Ø7,173,255,2Ø7,32,2Ø5
,189,169,32,32,21Ø,255,56,165 :REM*156
8Ø DATA 253,229,43,17Ø,165,254,229,44,32,2
Ø5,189,169,33,32,21Ø,255,96 :REM*59
```

—DAVID M. FICKEN, TOPSAIL, NFLD., CANADA

\$568 1K RAM C-64 EXPANDER

1K RAM Expander is a C-64 program that provides 1228 bytes of additional Basic memory. When you run it, PRINT FRE(0)+2↑16 reveals 40137 bytes free instead of the usual 38909. Some dynamic memory reconfigurations make this possible.

The program reconfigures memory by moving screen memory to locations 49152 through 50151 and sprite pointers to 50168 through 50175. Sprites must be stored at locations 49152 through 65535 and the character set at locations 57344 through 61439. Basic memory now runs from 828 to 40959, making larger programs possible.

```
Ø REM 64 1K RAM EXPANDER - RICHARD PENN :REM*36
1Ø POKE 56334,Ø:POKE 1,51:POKE 781,16:POKE
782,255:POKE 9Ø,Ø:POKE 91,223 :REM*166
2Ø POKE 88,Ø:POKE 89,239:SYS 41964:POKE 1,
55:POKE 56334,1 :REM*252
3Ø POKE 56578,PEEK(56578)OR3 :REM*2
4Ø FOR U=679 TO 693:READ Q:POKE U,Q:CK=CK+
Q:NEXT :REM*123
5Ø IF CK <> 1777THENPRINT"ERROR IN DATA..." :E
ND :REM*23
6Ø DATA 72,169,148,141,Ø,221,169,9,141,24,
2Ø8,1Ø4,76,131,164 :REM*117
7Ø POKE 77Ø,167:POKE 771,2:POKE 648,49152/
256 :REM*41
8Ø PRINTCHR$(147)"1K RAM EXPANDER BY RICHAR
RD PENN" :REM*27
9Ø POKE 43,53:POKE 44,3:POKE 82Ø,Ø:NEW
:REM*213
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$569 64 INSTANT DATA

Here is one of the fastest, shortest ways to make Basic Data statements out of any machine language program. After running the program, enter, when prompted, the range of memory where the machine language resides—a starting line number followed by a line number increment.

After 64 Instant Data does its conversion to Data statements, delete line numbers 60000 on up and save the data. You can then use the data in your own Basic programs.

```
Ø REM 64 INSTANT DATA - DAVID FICKEN :REM*11Ø
6ØØ1Ø INPUT"START ADDRESS";A:INPUT"END ADD
```

Continued on p. 80.

MAGIC

From p. 10.

```

RESS";EA                                :REM*117
60020 INPUT"START AT WHAT LINE";L:INPUT"LI
NE INCREMENT";LI                        :REM*65
60030 IFLI<10RA>EAORL<0THENPRINT"???ERROR"
:END                                    :REM*93
60040 PRINT"{SHFT CLR}"L"DATA";:X=0
                                           :REM*168
60045 A$=STR$(PEEK(A)):A$=RIGHT$(A$,LEN(A$
)-1)                                    :REM*57
60050 PRINTA$;:A=A+1:IFA=EATHENPOKE251,1:G
OTO60080                                :REM*129
60060 X=X+1:IFX<8THENPRINT",";:GOTO60045
                                           :REM*200
60070 POKE251,0                          :REM*239
60080 PRINT:PRINT"A="A":EA="EA":L="L":LI="
LI":GOTO60010                            :REM*12
60090 POKE198,4:POKE631,19:POKE632,13:POKE
633,13:STOP                             :REM*26
60100 IFPEEK(251)THENPRINT"{SHFT CLR}DONE.
." :LIST                                :REM*246
60110 L=L+LI:GOTO60040                    :REM*211
  
```

—DAVID M. FICKEN, TOPSAIL, NFLD., CANADA

\$56A PORTING BASIC 7.0 TO GWBASIC

I like to port Basic 7.0 programs from my C-128 over to

GWBasic, the version of MS-DOS Basic used on PC-com-
patible computers. The initial process requires five Direct
Mode commands on the C-128, as follows:

```

DLOAD "filename"
DOPEN#4,"newfilename",D0,U8,W
CMD4
LIST
PRINT#4:DCLOSE
  
```

In the above example, "filename" is the C-128 program
to be converted. It is written back to disk as a sequential file,
which you can then convert to an MS-DOS disk format by
using RUN's Commodore-to-MS-DOS conversion program
(April 1989).

Once it's in MS-DOS format, it can be loaded into GWBasic
and certain keywords can be converted. For example, you
have to change "PRINT#4," to the GWBasic keyword LPrint.
This entire process is many times faster than typing a Basic
7.0 program into your MS-DOS computer and making all
the keyword conversions.

—NICK J. PIAZZA, SYLVANIA, OH ■

*Magic is a forum for RUN's readers to share their programming
tips, brief software or hardware modifications, shortcuts or items of
general interest. If you have an idea to make computing easier and
faster, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough,
NH 03458. RUN pays \$10 to \$40 for each trick published.*

FOOTBALL • BASKETBALL • BASEBALL

SPORTS FANS...THE SPORTS SIMULATIONS YOU HAVE BEEN WAITING FOR ARE HERE!

3 IN 1 FOOTBALL

- with Stats Compiler for each player and team • you choose from 14 offensive plays and 6 defensive formations • includes 180 college teams and the 28 Pro teams from the '88 season PLUS 174 great college and 189 great pro teams of the past

NEW!
3-POINT SHOT

COURT SIDE COLLEGE BASKETBALL & BASKETBALL: THE PRO GAME

- each player contributes as they did in real life • Stats Compiler • you determine starting lineup, substitutions, shot selection, passing, offensive and defensive styles of play and more • the College game includes 292 teams from the '88-'89 season plus 70 all-time greats
- the Pro game features the 23 Pro teams from '88-'89 and more than 125 great teams of the past

FULL COUNT BASEBALL

- Includes all 26 teams from the most recent and 52 great teams from the past • 29 man rosters • Ball park effects • Stats Compiler automatically keeps all player and team stats as well as past schedule results. • Complete boxscore to screen and/or printer after each game. • One player vs. computer manager, two-player, and auto-play options. • Input your own teams, draft or trade players from teams already included. • You choose the starting lineups, batting order, relief pitchers, plus game decisions like when to hit away, bunt for a hit, sacrifice, steal, hit & run, bring in the corners or the entire infield, take an extra base, DH option and more!

FULL COUNT Standings & League Leader Program \$14.99

OTHER PAST SEASONS' TEAMS DISKS AVAILABLE AND NEW SEASONS' READY PRIOR TO PLAYOFFS FOR ALL GAMES.

Send check or money order for \$39.99 each. Visa and MasterCard accepted on phone orders only.
Please add \$2.00 for postage and handling.

LANCE HAFFNER GAMES

P.O. Box 100594 • Nashville, TN • 37224 • 615/242-2617

INQUIRE ABOUT OUR INSTANT BASEBALL AND INSTANT FOOTBALL DISKS.

Circle 61 on Reader Service card.

RUN

THE **COMMODORE** 64 / 128 USER'S GUIDE

January 1990
An IDG
Communications
Publication

GET CREATIVE & PRODUCTIVE

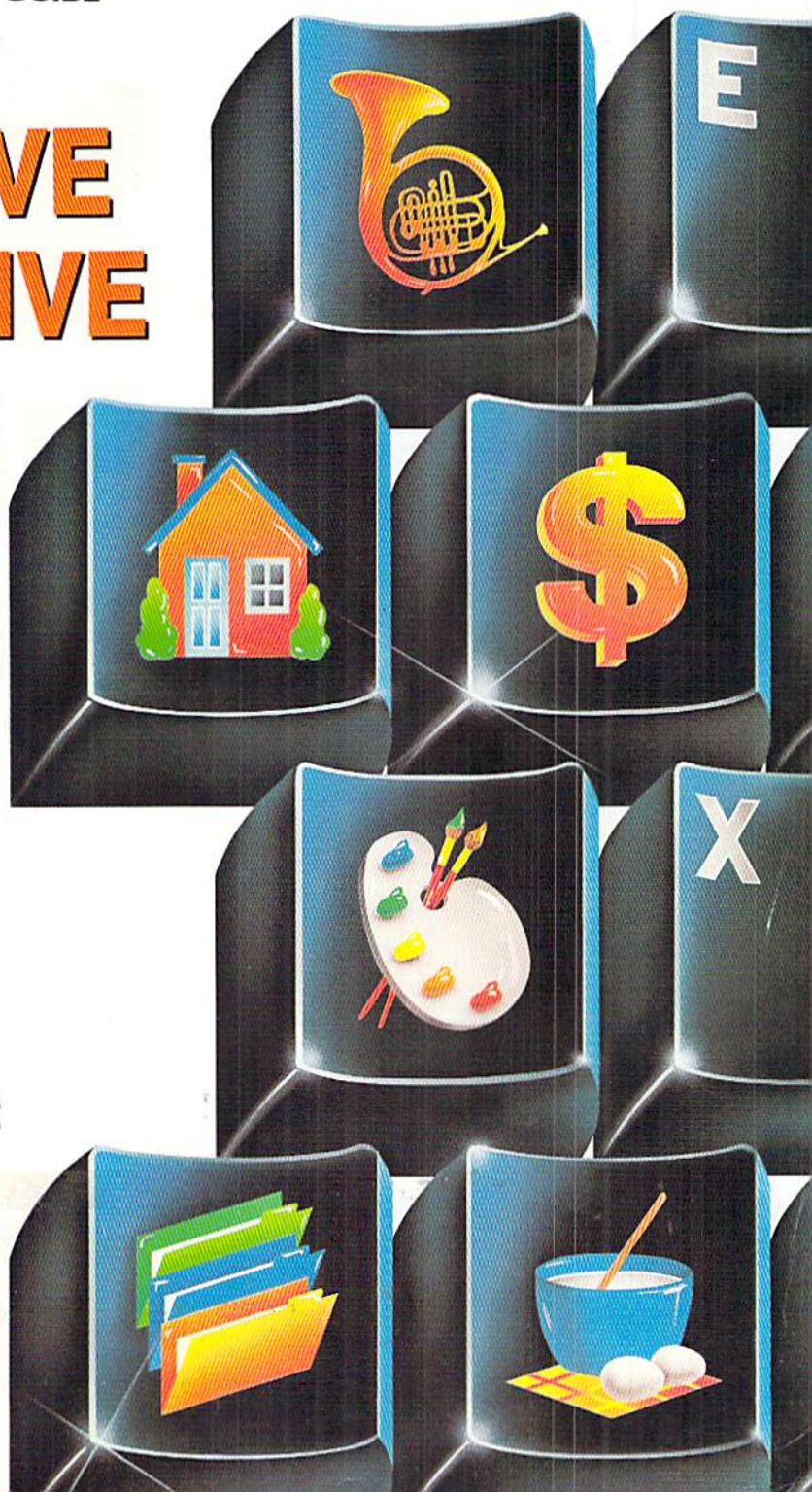
with

- ▶ **MONEY MANAGER**
- ▶ **EASY-TO-USE
128 DATABASE**
- ▶ **OTHER CREATIVE
PROGRAMS
GALORE!**

PLUS!

- ▶ Check Out *RUN's*
Improved Checksum
- ▶ *RUN* Welcomes New Columnist

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00



MAGIC

Discover how to clear your screen, generate truly random numbers and get an animated cursor.

By TIM WALSH

\$56B VERIFYING WITH RUN SCRIPT

Here's an almost foolproof method of determining if you're working with the latest version of a document created with RUN Script 64 or 128. Load in one file of the document, and then press F1, followed by the F key, to display the number of bytes free in the command bar at the top of the screen. Then load in the other version of the document and repeat the process. Compare the number of bytes free. If they match, the chances are good that the documents are identical. If you remember adding text to the first version of the document, the latest version will show fewer bytes free. If, on the other hand, you deleted text, the version with more bytes free will be the latest.

—TIM WALSH, MAGIC COLUMNIST

\$56C ILLEGAL C-128 TRAPPING SEASON

You can use the unimplemented Off and Quit commands in Basic 7.0 to develop programming subroutines similar to those found in Amiga, Apple Macintosh and other 68000-series computers. I've written a short routine that shows how to use Trap, the unimplemented Off command and the Err\$ function to execute a perfectly functioning subroutine, all without the use of a single Goto or GoSub! Give it a try, it works remarkably well.

```
Ø REM ILLEGAL C-128 INSTRUCTION TRAPS - DA
  RYL L. KNOWLES :REM*136
1Ø TRAP 5ØØØ :REM*136
2Ø PRINT"TESTING UNIMPLEMENTED COMMAND 'OF
  F' ":OFF :REM*1Ø7
3Ø PRINT"THIS IS THE MAIN PROGRAM IN LINE
  3Ø!" :REM*229
4Ø END :REM*168
5ØØØ REM ERROR TRAP :REM*191
5Ø1Ø PRINT ERR$(ERR)" IN LINE";EL:PRINT:HE
  LP :REM*82
5Ø2Ø PRINT"THIS IS THE TRAP HANDLER IN LIN
  ES 5ØØØ - 5Ø3Ø" :REM*151
5Ø3Ø RESUME NEXT :REM*149
```

—DARYL L. KNOWLES, JR., GREENVILLE, TX

\$56D CURING NON-RANDOM RND NUMBERS

Even novice programmers quickly realize that the C-64's RND function does not return a series of truly random numbers. 64 Non-Random RND uses the random number generator of voice 3 of the SID sound chip to enhance the RND function. Run my program in conjunction with any program

that uses RND and the result is truly random numbers.

For reference purposes, note that run-stop/restore does not deactivate my utility. Also, voice 3 will not function properly when 64 Non-Random RND is activated.

```
Ø REM 64 CURE FOR NON-RANDOM RND - DENNIS
  CULLEY :REM*243
1Ø FOR T= 679 TO 716:READ D: CK=CK+D:POKE
  T,D:NEXT :REM*5
2Ø IF CK <> 52Ø6 THENPRINT"ERROR IN DATA..
  .":END :REM*161
3Ø CK=Ø:FOR T= 828 TO 883:READ D: CK=CK+D:
  POKE T,D:NEXT :REM*24Ø
4Ø IF CK <> 7678 THENPRINT"ERROR IN DATA..
  .":END :REM*43
5Ø SYS 828 :REM*18Ø
6Ø DATA 165,1,41,254,133,1,76,Ø,Ø,169,255,
  141,14,212,141,15,212,169,128 :REM*151
7Ø DATA 141,18,212,162,4,173,27,212,149,97
  ,234,234,234,2Ø2,2Ø8,245,76 :REM*51
8Ø DATA 227,224,173,2,3,141,174,2,173,3,3,
  141,175,2,16Ø,Ø,132,251,169 :REM*53
9Ø DATA 16Ø,133,252,177,251,145,251,2ØØ,2Ø
  8,249,23Ø,252,165,252,2Ø1,192 :REM*211
1ØØ DATA 2Ø8,241,169,176,141,96,16Ø,169,2,
  141,97,16Ø,169,167,141,2,3,169 :REM*84
11Ø DATA 2,141,3,3,96 :REM*121
```

—DENNIS CULLEY, WEST CHICAGO, IL

\$56E LEFT/RIGHT SCREEN CLEAR 64

The next time you write a C-64 program, try incorporating Left/Right Screen Clear 64 into it. After typing in, saving and running this machine language routine, it resides in memory at location 49152. Then, entering SYS 49152 in either Program or Direct mode clears the entire screen from the center in a left/right sweeping motion.

```
Ø REM LEFT-RIGHT SCREEN CLEAR 64 - JEFFREY
  PANICI :REM*82
1Ø FORX=49152TO49152+1Ø7:READD:POKEX,D:C=C
  +D:NEXT :REM*229
2Ø IFC<>17Ø61THENPRINT"ERROR!!!":END
  :REM*58
3Ø DATA 169,2Ø,133,25Ø,169,Ø,162,4,16Ø,216
  ,133,251,133,253,134,252,132 :REM*49
4Ø DATA 254,162,24,16Ø,38,177,251,2ØØ,145,
  251,136,177,253,2ØØ,145,253,136 :REM*8Ø
5Ø DATA 136,192,2Ø,176,239,16Ø,2Ø,169,32,1
  45,251,16Ø,1,177,251,136,145 :REM*238
```


MAGIC

```
60 DATA 251,200,177,253,136,145,253,200,20
  0,192,21,144,239,160,19,169,32:REM*208
70 DATA 145,251,165,251,24,105,40,133,251,
  144,2,230,252,165,253,24,105,40:REM*163
80 DATA 133,253,144,2,230,254,202,16,181,1
  60,10,202,208,253,136,208,250:REM*126
90 DATA 198,250,208,153,96:REM*60
100 SYS49152:REM*11
```

—JEFFREY D. PANICI, SANDWICH, IL

\$56F WHIRLPOOL SCREEN CLEAR 64/128

What sets Whirlpool Screen Clear 64/128 apart from other screen-clearing routines is that it not only works in C-64 mode, but also in 40-Column C-128 mode. It works by starting at the center of the screen and clearing characters in a counter-clockwise motion, finally ending at the home screen position.

```
0 REM WHIRLPOOL SCREEN CLEAR 64/128 - JERRY
  Y DICKSON:REM*66
10 PRINT"{7 CRSR UPs}":FORT=1983TO2023
  :REM*106
20 A=1483:B=1:POKE1484,32:REM*239
30 FORT=ATOA+(40*B)STEP40:POKET,32:NEXT:A=
  A+(40*B):FORT=ATOA+B:POKET,32:NEXT
  :REM*191
```

```
40 B=B+1:A=A+B:IF(A-(40*B))<1024THEN70
  :REM*61
50 FORT=ATOA-(40*B)STEP-40:POKET,32:NEXT:A
  =A-(40*B):B=B+1:REM*8
60 FORT=ATOA-BSTEP-1:POKET,32:NEXT:A=A-B:G
  OTO30:REM*201
70 A=2016:B=1991:FORT=1992TO2015:POKET,32:
  NEXT:REM*26
80 FORT=ATOA-(23*40)STEP-40:POKET,32:NEXT:
  POKET,32:FORT=B-(24*40)TOBSTEP40
  :REM*122
90 POKET,32:NEXT:A=A+1:B=B-1:IFA>2023THENP
  RINTCHR$(19):END:REM*193
100 GOTO80:REM*236
```

—JERRY DICKSON, SANDWICH, IL

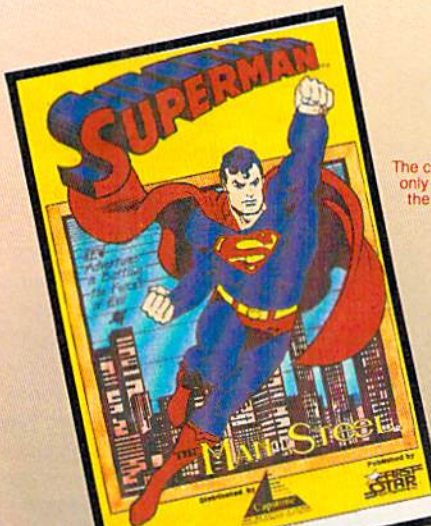
\$570 ULTIMATE C-64 GET CURSOR

Since the first C-64 rolled off the assembly line, routines have been written that give a cursor to Basic 2.0's Get statement. My Get routine, the Ultimate C-64 Get Cursor, provides more than a mere cursor—it's an *animated* custom character!

You can modify the routine for use in your own programs, provided you don't change the Data statements at the end. You may renumber them, however. You can also alter the speed of the animation by setting the variable C to any value between 0 and 255.

```
0 REM ULTIMATE 64 GET CURSOR - JERRY DICKS
  ON:REM*47
10 CLR:RESTORE:POKE53280,6:POKE53281,0
  :REM*226
20 POKE56334,,:POKE1,51:POKE781,9:POKE782,
  ,:POKE90,,:POKE91,216:POKE88,,:REM*51
30 POKE89,64:SYS41964:POKE1,55:POKE56334,1
  :POKE54272,216:POKE53272,30:REM*215
40 READA:IFA=-1THENPOKE53272,31:GOTO60
  :REM*137
50 FORC=.TO7:READD:POKE14336+A*8+C,D:NEXT:
  GOTO40:REM*137
60 C=45:PRINT"{SHFT CLR}{CRSR DN}{CTRL 2}H
  OLD DOWN 1, 2, OR 3 TO CONTINUE ";
  :REM*12
70 GETA$:IFA$<>"1"AND A$<>"2"AND A$<>"3"TH
  EN GOSUB90:GOTO70:REM*199
80 PRINT"{CRSR LF}":END:REM*3
90 PRINT"{CRSR LF}{SHFT Z}":FORT=1TOC:NEX
  T:PRINT"{CRSR LF}{SHFT +}":FORT=1TOC:N
  EXT:PRINT"{CRSR LF}{CMD -}":REM*21
100 FORT=1TOC:NEXT:PRINT"{CRSR LF}{SHFT -}
  ":FORT=1TOC:NEXT:PRINT"{CRSR LF}{CMD
  -}":FORT=1TOC:NEXT:REM*67
110 PRINT"{CRSR LF}{SHFT +}":FORT=1TOC:NE
  XT:RETURN:REM*23
120 DATA90,255,129,129,129,129,129,129,255
  :REM*15
130 DATA91,,126,66,66,66,66,126,,:REM*78
140 DATA92,,,60,36,36,60,,,:REM*184
150 DATA93,,,,,24,24,,,,,-1:REM*37
```

—JERRY DICKSON, SANDWICH, IL ■



**ONLY
\$19**

The clock is ticking with only hours left to save the world...

SYSTEM	REQUIREMENTS	PRICE
Amiga		\$25
Atari ST		\$25
C64/128		\$19
IBM 514*	CGA, EGA, VGA	\$25
IBM 315*	CGA, EGA, VGA	\$25

MAINSTREAM America

"If you want it, we have it. Call for the best price and service."

Call 1-800-345-1181 NOW!




Please send your check or money order to Mainstream America, 1012 South Main Street, Taylor, PA 18517. All orders must add \$3.00 for shipping and handling. Canadian orders add \$7.00. C.O.D. orders please add an additional \$4.00. Pennsylvania residents please add 6% sales tax. All inquiries call (717) 562-0650.

RUN

THE **COMMODORE** 64/128 USER'S GUIDE

Discover the World of TELECOMMUNICATIONS

- Online Chatting
- News/Information
- Software Libraries
- And More!

PLUS!

- Newest JiffyDOS Reviewed
- 1989 Annual Index
- C-64 Table Soccer
- Super Fonts for RUN Paint
- C-128 40-Column Speed-Up

February 1990
An IDG Communications Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00



MAGIC

Now you can put four-line addresses in Label Base, clean your drives in silence and add a dash of flash to your screen.

Compiled by TIM WALSH

\$578 AN EXTRA LINE FOR LABEL BASE

Many readers have expressed their fondness for Robert Kodadek's Label Base program (see the RUN Works disk or the August 1989 issue of RUN). However, some readers found its provision for only a one-line street address a serious limitation.

The following line changes to Label Base allow it to print two-line street addresses, or four lines per standard-sized mailing label. While adding the extra label line, I also took the liberty of adding an F8 function key Exit option to the main menu.

To incorporate these lines into Label Base, load and run RUN's new Checksum in either 64 or 128 mode. Now load the Label Base program, but don't run it. Type in the necessary changes, making certain the correct checksum numbers appear. Then deactivate RUN's Checksum and save the finished version of Label Base to a work disk, being sure to identify it as the four-line mailing label version.

```
0 REM LABEL BASE WITH FOUR LINE ADDRESS -
  TIM WALSH                                :REM*154
40 PS=0:LL=2:Q=250:C=40:MO=64:ML=828:YR=78
  2:PRINT CHR$(142)                        :REM*129
80 B$=CHR$(13)+CHR$(18):O$=CHR$(146):FOR I
  =0 TO 7:READ FD$(I),L$(I):NEXT I         :REM*102
120 DIM R$(Q,8),K(Q):FOR I=1 TO Q:K(I)=I:NE
  XT                                         :REM*54
225 PRINT B$ SPC(5)"F8" O$ - QUIT LABEL B
  ASE"                                       :REM*156
230 GOSUB310:KP=ASC(A$)-132:IF KP<1 OR KP>
  8 THEN 230                               :REM*86
240 ON KP GOSUB430,560,650,1330,980,880,15
  90,2040                                   :REM*16
490 FOR I=RN TO Q:FOR N=0 TO 7:INPUT#5,R$(
  I,N)                                     :REM*237
610 FOR I=1 TO NR:FOR N=0 TO 7:IF R$(K(I),
  N)="" THEN R$(K(I),N)=SP$              :REM*237
990 RN=T:NR=T:FLAG=1:FOR I=0 TO 7:R$(RN,I)
  ="" :NEXT I                             :REM*45
1000 GOSUB1080:FOR I=0 TO 7:X=8+I:Y=11:GOS
  UB280:POKE YR,L$(I)                     :REM*111
1030 NEXT I:K(RN)=RN:GOSUB270:Y=7:GOSUB280
  :PRINT"PRESS SPACE BAR FOR ANOTHER"    :REM*132
1090 X=8:Y=0:GOSUB280:FOR I=0 TO 7:LD=36-(
  24-L$(I))                               :REM*221
1180 X=8:Y=0:GOSUB280:FOR I=0 TO 7:REM*254
1280 FOR N=0 TO 7:R$(K(RN),N)=R$(NR,N):R$(
  NR,N)="" :NEXT N                       :REM*101
1430 GOSUB270:Y=7:GOSUB280               :REM*92
```

```
1520 FOR I=0 TO 7:R$(K(RN),I)="" :NEXT I
                                           :REM*95
1530 GOSUB1080:FOR I=0 TO 7:X=8+I:Y=11:GOS
  UB280:POKE YR,L$(I)                     :REM*123
1745 PRINT#4,R$(K(RN),3)                  :REM*57
1750 PRINT#4,R$(K(RN),4),"",CHR$(32) R$(K(R
  N),5) CHR$(32);                          :REM*188
1760 PRINT#4,R$(K(RN),6)                  :REM*71
1890 NS=NS+LEN(R$(K(I),7)):ND=79-NS
                                           :REM*192
1910 PRINT#4,R$(K(I),7):LC=LC+1:IF LC<60 T
  HEN 1930                                 :REM*58
1950 DATA LAST,15,FIRST,18,STREET,24,STREE
  T,24                                      :REM*57
2040 PRINTCHR$(147)SPC(10)"ARE YOU SURE? Y
  /N"                                       :REM*196
2050 GETA$:IF A$="" THEN 2050              :REM*90
2060 IF A$<>"Y" THEN RETURN                :REM*99
2070 END                                  :REM*158
```

—TIM WALSH, MAGIC COLUMNIST

\$579 RUN MAGAZINE DISK ID

If you'd like to add RUN to the two-character disk ID as you're formatting a 1541 disk in C-64 or C-128 mode, use the following in place of the Header command:

```
OPEN 15,15,"N0:diskname,"+"{SHIFT-SPACE}"+CHR$(138):
CLOSE 15
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$57A 128 UN-NEW

It doesn't happen often, but it does happen. You accidentally enter NEW and wipe out your favorite C-128 program before saving a copy to disk. If you have a copy of my 128 Un-New trick, your program will be restored as good as new!

Type the following in Direct mode (without a line number) then press return to revive the lost program:

```
POKE 7170,28:X=7171:DO:Y=PEEK(X):X=X+1:LOOP
UNTIL Y=28:POKE 7169,DEC(RIGHT$(HEX$(X-2),2))
```

—CHRIS HAYOSH, WARREN, MI

\$57B TEN C-128 FUNCTION KEYS!

Most C-128 computerists know that entering the Key command allows them to redefine function keys 1 through 8. My program, Ten C-128 Function Keys, adds the help key and the shift/run-stop key combination as two more programmable function keys.

After running the program, redefine shift/run-stop by entering 9, or the help key by entering 10. Be sure to test your

MAGIC

new key definitions by pressing either key after running the program.

```

Ø REM TEN C-128 FUNCTION KEYS - YOHANN TRE
  MBLAY :REM*23
1Ø SCNCLR:INPUT "ENTER FUNCTION KEY 9 OR 1
  Ø";K :REM*253
2Ø IF K<> 9 AND K <>1Ø THEN 1Ø :REM*56
3Ø INPUT"ENTER NEW STRING FOR FUNCTION KEY
  ";K$ :REM*1Ø4
4Ø FOR A = 1 TO LEN(K$):BANKØ :REM*26
5Ø POKE 49151+A,ASC(MID$(K$,A,1)):NEXT
  :REM*119
6Ø POKE 25Ø,Ø:POKE 251,192:POKE 252,Ø
  :REM*26
7Ø BANK 15:SYS 65381,25Ø,K,LEN(K$),Ø
  :REM*122
  
```

—YOHANN TREMBLAY, CHICOUTIMI, QUE., CANADA

Use it in either 128 or 64 mode with your favorite cleaning disk the next time you clean your drive.

```

Ø REM DISK DRIVE CLEANER - DANNY HUMMEL :REM*149
1Ø PRINTCHR$(147)"PLACE CLEANING DISK IN D
  RIVE, PRESS A KEY" :REM*116
2Ø GETA$:IF A$=""THEN 2Ø :REM*212
3Ø OPEN 15,8,15 :REM*138
4Ø OPEN 2,8,2,"#" :REM*99
5Ø FOR J=1 TO 35:PRINT#15,"U1:2 Ø 1 1"
  :REM*126
6Ø PRINT"PASS"J" OF 35" :REM*188
7Ø PRINT#15,"U1:2 Ø 35 1" :REM*132
8Ø NEXT J :REM*1Ø3
9Ø INPUT#15,A$,A$,A$,A$ :REM*82
1ØØ CLOSE 2:CLOSE 15 :REM*2Ø7
  
```

—DANNY J. HUMMEL, ESSEX, IA

\$57C DISK DRIVE-CLEANING HELPER

The use of cleaning disks is essential for long-term 1541 and 1571 operation, but getting the drive to spin without head-rattling and grinding noises is no small feat. My 1541/1571 Drive Cleaner spins the drive safely and quietly, with no rattling, grinding or other sound effects. Moreover, it spins the disk long enough to ensure a thorough cleaning.

\$57D QUICK COLOR 64

Have you ever wanted to change character color ROM in a fraction of a second? Changing character color in Basic is impossible, so I wrote Quick Color 64. After you've typed it in and saved it to disk, run it to see it in action.

It's fully relocatable to any address in memory and performs its magic via a SYS S, X command, with the value of



The ONE Disk Every New 64 and 128 Owner Needs!

☐ **YES!** Send me **RUN's SUPER STARTER PAK** today for just \$24.95 postage paid.

☐ Check Enclosed
☐ MasterCard ☐ VISA ☐ American Express

Card # _____ Exp. Date _____

Signature _____

Name _____

Address _____

City _____

State _____ Zip _____

Make checks payable to RUN Magazine. Foreign orders please add \$2.50 per disk for airmail delivery. Please allow 3-6 weeks for delivery. SP290

80 Elm Street • Peterborough, NH 03458

7 of the Most Important Functions Your Computer Was Created for. . . All for Less Than \$25.00!!!

- **RUN SCRIPT PLUS.** A powerful *word processor* with spelling checker and dictionary.
- **RUN FILE.** An immensely useful *database* for collecting, sorting and printing stacks of records.
- **RUN CALC.** A *spreadsheet* that's so easy and useful for all your statistical needs.

PLUS!

- **RUN TERM PLUS** telecommunications program.
- **RUN LABELS** label printing utility.
- **RUN SHELL** disk manager.

AND!!!

- **RUN PAINT.** The super-popular, full-featured *paint and draw* program!

ORDER NOW! Call 1-800-343-0728

or use this handy coupon.

MAGIC

X ranging from 0 to 15. A demo program is incorporated into Quick Color 64 that lists the three "working" lines once the control key is pressed.

```

REM QUICK COLOR 64 - JEFFREY PANICI
                                :REM*46
10 PRINTCHR$(147):CK=.:S=828:FORX=STOS+23:
  READD:POKE X,D:CK=CK+D:NEXT      :REM*225
20 IFCK<>3953THENPRINT"ERROR!":END:REM*113
30 DATA 32,155,183,138,162,,157,,216,157,2
  55,216,157,254,217,157,253      :REM*109
40 DATA 218,232,208,241,96,96,153 :REM*30
50 FORT=1TO10:PRINTTAB(8)"PRESS CONTROL TO
  END":NEXT                       :REM*25
60 C(1)=1:C(2)=3:C(3)=6:C(4)=14   :REM*245
70 FORX=1TO4:SYS828,C(X)           :REM*210
80 FORP=1TO4:NEXTP,X              :REM*99
90 IFPEEK(653)<>4THEN 70           :REM*60
100 PRINTCHR$(147)"(CTRL 9)USE LINES 10-40
  IN YOUR OWN PROGRAMS":POKE 646,1:LIST
  10-40                           :REM*151
  
```

—JEFFREY D. PANICI, SANDWICH, IL

\$57E MAGIC FLASH 64

Thanks to its color graphics modes, there's almost an unlimited number of video effects that the C-64 can generate.

By taking advantage of the 64's Extended Background Color mode, Magic Flash 64 causes all shifted characters to color cycle, catching the attention of anyone nearby.

Once you save the program to disk, run it. A sample screen appears that demonstrates the program in action. SYS 49152 activates the routine from within your own programs and SYS 49196 disables it. For a dramatic effect, enter SYS 49171, which fills the screen with shifted spaces.

```

REM MAGIC FLASH 64 - SCOTT FICARRO
                                :REM*171
10 DATA 120,169,13,141,20,3,169,192,141,21
  ,3,88,96,238,34,208,76,49,234   :REM*16
20 DATA 169,96,160,0,153,0,4,153,0,5,153,0
  ,6,153,0,7,200,192,0,240,3,76   :REM*196
30 DATA 23,192,96,120,169,49,141,20,3,169,
  234,141,21,3,88,96              :REM*233
40 FOR I=0TO56:READ A:POKE 49152+I,A:NEXT
  :REM*239
50 A=53265:POKE A,PEEK(A)OR64:REM EXTENDED
  BACKGROUND MODE                 :REM*195
60 POKE 53280,0:POKE 53281,0:POKE 646,1
  :REM*196
70 SYS 49152                      :REM*244
80 PRINTCHR$(147)"(SHFT M){SHFT A}{SHFT G}
  {SHFT I}{SHFT C}{SHFT F}{SHFT L}{SHFT
  A}{SHFT S}{SHFT H} BY {SHFT S}{SHFT C}{
  "
  
```

Excellence ... for the Commodore

Lt. Kernal - a 20 or 40 Megabyte Hard Drive which supports CPM, includes enhanced system commands, and is expandable, configurable, & FAST! Great for BBS operation.

Super Graphix GOLD - the ultimate printer interface which supports 128 FAST serial and includes a 32K buffer, 4 built-in fonts, 4 downloadable fonts, and a utility disk with 27 fonts.

Super Graphix - an enhanced printer interface which has NLQ built in and includes an 8K buffer, 2 downloadable fonts, reset button, and a utility disk with 27 fonts.

Super Graphix jr - an economical printer interface with NLQ built in and includes 10 printing modes, graphics, and easy operation.

FontMaster II - a powerful word processor for the C-64 with 30 fonts ready to use, 65 commands, font creator, data merging, super- and subscripting, italicizing and more.

FontMaster 128 - a super word processor for the 128 with 56 fonts ready to use including foreign language fonts, on-screen font preview, 4 column printing, a 102,000-word spell checker and much more.

The Xetec Product Family for the Commodore C64® and 128®.

The name that spells *Quality, Affordability, and Reliability*

All Hardware is FCC Certified All Interfaces include a Lifetime Warranty

Commodore C64 and 128 are registered trademarks of Commodore Business Machines, Inc.

xetec

Xetec, Inc. 2804 Arnold Rd. Salina, KS. 67401 (913) 827-0685

MAGIC

```
SHFT O){2 SHFT Ts} {SHFT F}{SHFT I}{SHF
T C}{SHFT A){2 SHFT Rs}{SHFT O}"
:REM*251
```

—SCOTT FICARRO, SUSQUEHANNA, PA

\$57F 80-COLUMN CURSOR MAGIC

Even long-time C-128 users might not be aware of all the special effects that the C-128's 80-column cursor is capable of producing. Register 10 of the C-128's 80-column 8563 chip controls the cursor's image. The syntax for adjusting the cursor is:

```
SYSDEC("CDCC"),DEC("XY"),10
```

The values for X are as follows:

- 0: Nonblinking cursor
- 2: Turn cursor off
- 4: Fast-blinking cursor
- 6: Slow-blinking cursor

The value of Y can vary from 0 through 7, where 0 is a large block cursor and 7 is a short underline. The following program demonstrates the differences in appearance of the cursors by adjusting both the size and the blinking rate. Use these various cursors in your next C-128 80-column program.

```
Ø REM VARIABLE SIZED 8Ø-COLUMN CURSOR - KE
VIN SMITH :REM*85
1Ø SCNCLR:PRINT"PRESS ESC KEY OR SPACEBAR
TO TOGGLE CURSOR" :REM*95
15 PRINT"ANY OTHER KEY EXITS PROGRAM"
:REM*177
2Ø SYSDEC("CDCC"),DEC("Ø7"),1Ø :REM*198
3Ø GETKEYA$ :REM*Ø
4Ø IF A$=CHR$(27) THEN SYSDEC("CDCC"),DEC(
"4Ø"),1Ø:GOTO 3Ø :REM*88
5Ø IF A$=CHR$(32) THEN PRINT A$:GOTO 2Ø
:REM*25
6Ø END :REM*188
```

—KEVIN SMITH, BALTIMORE, CT ■

Magic is a forum in which RUN's imaginative and inventive readers can share with other Commodore users their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

TAXPERFECT™

Get TaxPerfect™ now and relax on April 15th . . .

- SEVENTH SUCCESSFUL YEAR! • MANY THOUSANDS ALREADY IN USE!
- Your Simple Answer to the Tax Reform Act of 1986 (As Amended)

- TaxPerfect is the quick, correct, easy way to do your taxes • Absolutely up-to-date with the Tax Reform Act of 1986 and **all** new tax changes • Simplest tax return preparation program available — at any price • Single-keystroke form-to-form change • Automatically calculates and transfers data from every FORM and Schedule to FORM 1040 • Simply answer the questions — TaxPerfect calculates return, tax due or amount of refund due you • Automatically elects the greater of Standard or Itemized deductions • Prints data to all FORMS or Schedules you need for your complete return — ready to sign and file • Highly acclaimed by tax pros, CPA's and tax preparers, TaxPerfect is easy to understand and a pleasure to work with. Available for Commodore 64 and Commodore 128.
- TaxPerfect is fully screen-prompted, menu-driven and easy to use. System includes comprehensive User's manual with helpful tutorial example.
- With a single keystroke, TaxPerfect instantly recalculates your entire return when you change any item.
- TaxPerfect also prints directly onto IRS forms.
- TaxPerfect data files can be stored on disk.
- TaxPerfect yearly updates are available at 50% discount to registered TaxPerfect users.
- TaxPerfect is an essential addition to your personal software library — and best of all, it's tax deductible.

TAX PLANNING

- Most powerful program features available — at any price • Supports RAMdisk • Prints the input sheets to organize your data • Built-in calculator feature accumulates input and enters total • 32 PF key functions achieved with 1 or 2 keystrokes
- Fast, complete tax calculations — 20 forms in under 2 seconds (most returns in under 1 second)
- On-line pop-up Help menus • Full calculation-override capability • Follows IRS text & line #s **exactly** • Exclusive context-sensitive Datacheck™ pinpoints omissions — and alerts you to effects of your input • Our exclusive Current Values Display constantly reflects all changes with your input • In Planning Mode all unnecessary text input prompts are eliminated. Only numeric input is prompted for.

RETURN PREPARATION

TaxPerfect **PRINTS THE INCOME TAX RETURN FOR YOU: TaxPerfect 64** — prints page 1 & page 2 of the FORM 1040 and Schedules A,B,C,D,E and SE as well as FORM 2441, 3903 and 6251 on standard IRS government forms or on blank computer paper for use with transparent overlays. **TaxPerfect 128** — supports all of the above forms **plus** Schedules F and R and FORMS 2106, 2119, 2210, 3800, 4136, 4255, 4562 and 4684. All other forms and schedules are considered in the calculation. TaxPerfect features direct screen input using fast ten-key style on the Commodore 128.

FULL-FEATURED DEPRECIATION SUPPORT

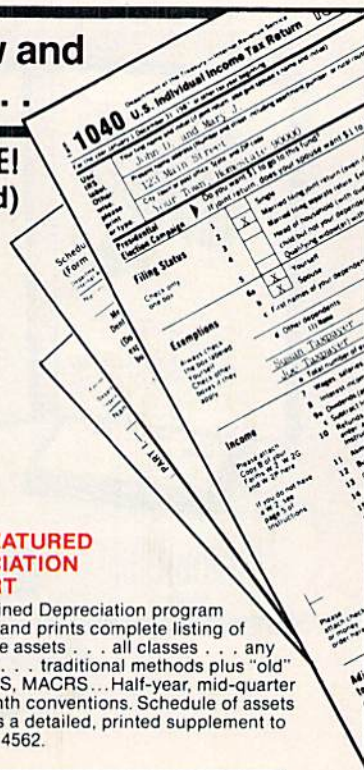
Self-contained Depreciation program calculates and prints complete listing of depreciable assets . . . all classes . . . any length life . . . traditional methods plus "old" rules, ACRS, MACRS . . . Half-year, mid-quarter & mid-month conventions. Schedule of assets attaches as a detailed, printed supplement to the FORM 4562.

Commodore 64 and Commodore 128 are TRADE-MARKS of Commodore Business Machines Corp.

Complete 1989 Edition: TaxPerfect 64 **\$89** TaxPerfect 128 **\$99**

TO ORDER Call Toll Free 1-800-525-5611 24 Hrs. from anywhere outside Dallas. In Dallas Call 214/386-6320. MasterCard, VISA, Money Orders, Bank Checks and COD Orders Accepted (add 3% surcharge for credit card processing) (Texas residents add 8% sales tax) (add \$5.00 for COD) (\$5.00 Shipping)

Financial Services Marketing Corporation • 500 North Dallas Bank Tower • 12900 Preston Road • Dallas, Texas 75230



RUN

THE COMMODORE 64/128 USER'S GUIDE

March 1990
An IDG
Communications
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

Chart a Course For Easy Applications

PLUS!

- Speedy Disk Viewer
- Color Changer
- C-64 Arcade Action
- Print a Month
- geoTips
- And More



Ed Parker



Spreadsheet Straits

Isle of Education

Word Processing Bay

Desk Top Cove

Gulf of Graphics

Cape Keyboard

Commodore Island

Telecom Island



MAGIC

Access Fast mode on your C-128—in C-64 mode; display all characters on the screen at once; put word wrap into your adventure game programs.

By TIM WALSH

\$580 1764 RAM EXPANDER DISCOVERIES

As a Commodore Service Technician, my curiosity was piqued by stories of the C-64's 1764 RAM Expander usage in 128 mode. I plugged the unit into a C-128 to discover for myself if it would work. Lo and behold, all RAM expansion-compatible software worked fine with it, including GEOS!

My next step was to upgrade the 1764's stock 256K of RAM to the 512K offered by the hard-to-find Commodore 1750 RAM Expander. With eight low-profile 16-pin IC sockets and eight 41256-2 RAM chips in hand, I opened the 1764's case. First, I removed the solder in the 1764's empty circuit holes and soldered in the IC sockets. Next, I plugged the eight RAM chips into the sockets, carefully observing the proper position of pin 1.

With its new double-capacity RAM in place, my beefed-up 1764 passed all the 1750 diagnostic tests. After many months of use, GEOS 64 and 128 and Digital Solution's Pocket Series software still work fine on it. Any C-128 owner with a steady soldering hand can do the same to a 1764.

—SCOTT SUMIDA, KAILUA, HI

\$581 RELOCATABLE RAM ENHANCER

Many Commodore computerists want to know how to access their 1700, 1750 or 1764 REU from outside of programs such as GEOS. Well, look no further. Relocatable 64 RAM Enhancer can be placed virtually anywhere in free memory.

Designed to help programmers access the REU more easily, Relocatable 64 RAM Enhancer provides the C-64 with an elaborate SYS command. By changing the values associated with the SYS command, this program provides the functional equivalent of the C-128's Basic 7.0 Stash, Fetch and Swap commands used to move data to and from the REU.

```
0 REM RELOCATABLE C-64 RAM ENHANCER - MICHAEL MYERS :REM*235
10 AD=49152:SA=AD :REM*79
20 READQ:IF Q=256 THEN 40 :REM*223
30 POKE AD,Q:AD=AD+1:GOTO 20 :REM*100
40 PRINTCHR$(147)"RAM ENHANCER SYNTAX: :REM*85
50 PRINT:PRINT"SYS"SA",A,B,C,D,E" :REM*190
60 PRINT"A = COMPUTER STARTING ADDRESS" :REM*161
70 PRINT"B = COMPUTER ENDING ADDRESS+1" :REM*240
80 PRINT"C = REU STARTING ADDRESS":REM*181
90 PRINT"D = REU BANK, AS FOLLOWS:" :REM*249
100 PRINTTAB(6)" 1700 = 0-1" :REM*31
```

```
110 PRINTTAB(6)" 1764 = 0-3" :REM*151
120 PRINTTAB(6)" 1750 = 0-7" :REM*184
130 PRINT"E = OPERATION (0-2), AS FOLLOWS: :REM*158
140 PRINTTAB(6)" 0 = STASH" :REM*160
150 PRINTTAB(6)" 1 = FETCH" :REM*122
160 PRINTTAB(6)" 2 = SWAP" :REM*94
170 DATA 32,253,174,32,138,173,32,247,183, :REM*213
140,2,223,141,3,223,32,253,174,32
180 DATA 138,173,32,247,183,56,165,20,237, :REM*141
2,223,141,7,223,165,21,237,3
190 DATA 223,141,8,223,32,253,174,32,138,1 :REM*132
73,32,247,183,140,4,223,141,5
200 DATA 223,32,253,174,32,158,183,138,41, :REM*243
7,141,6,223,32,253,174,32,158
210 DATA 183,120,169,127,141,13,221,138,41 :REM*156
,3,9,128,141,1,223,165,1,41
220 DATA 252,133,1,141,0,255,165,1,9,3,133 :REM*31
,1,169,144,141,13,221,88,96,0
230 DATA 256 :REM*71
```

—MICHAEL MYERS, BEARDSTOWN, IL

\$582 SPRITE PULSATOR 64

Need to add a little flash to those dull pointers in your menu programs? Or maybe you just want an unusual sprite? Then use Sprite Pulsator 64! Activate this machine language program, and sprite 1 pulsates in shades of blue. It's attractive, short and lends variety to any program that utilizes sprites.

```
0 REM SPRITE PULSATOR 64 - JEFFREY PANICI :REM*65
10 PRINTCHR$(147)"CHECKING";:CK=. :REM*203
20 S=49152:FORX=STOS+58:READD:POKE X,D:CK=C :REM*183
K+D:PRINT"(HOME)"TAB(10);CK:NEXT:REM*70
30 IFCK<>5313THENPRINT"ERROR!":END :REM*77
40 FORX=12288TO12288+64:POKE X,255:NEXT :REM*78
50 PRINT"{SHFT CLR}":POKE53248+21,1:POKE53 :REM*187
248,170:POKE53248+1,170:POKE2040,192:SY :REM*183
S49152 :REM*227
60 REM INTERRUPT DATA :REM*213
70 DATA 120,169,13,141,20,3,169,192,141,21 :REM*227
,3,88,96,172,60,3,136,140,60
80 DATA 3,208,24,160,5,140,60,3,174,61,3,1 :REM*213
89,49,192,141,39,208,232,224
90 DATA 6,208,2,162,0,142,61,3,76,49,234,1 :REM*213
,3,14,6,14,3,153,55,240,19
```

—JEFFREY PANICI, SANDWICH, IL

\$583 128 SCREEN COLOR CYCLER

As with the C-64, the C-128 allows you to change the cursor color by holding down the control key and pressing a number key. After activating my machine language utility, 128 Screen Color Cycler, you can change the 40-Column mode's screen and border colors by holding down the control key and pressing a function key. The color changes will occur even when a Basic program is running!

To cycle forward through the screen colors, hold down the control key and press the F1 key. To cycle backward, use control/F3. Similarly, F5 and F7 cycle the border colors the same way. Best of all, 128 Screen Color Cycler use of the control/function key combinations allows the C-128 function keys to remain unaltered by this program.

```

0 REM 128 SCREEN COLOR CYCLER - JAMES LINDLY
1 SCNCLR:TRAP60:FAST
2 FOR I = 3074 TO 3257:READ ML:POKEI,ML:C=C+1:NEXT
3 IF C<>184 THEN PRINT "ERROR IN DATA STATEMENTS!!":END
4 PRINT "{CRSR DN}TYPE: SYS 3074 TO {CTRL 9}ENABLE{CTRL 0} - SYS 3244 TO {2 SPACES}{CTRL 9}DISABLE{CTRL 0}"
5 SLOW:END
6 SLOW:HELP
7 DATA 120,173,20,3,141,0,12,173,21,3,141,1,12,169,116,141,20,3,169,12
8 DATA 141,21,3,169,0,133,170,133,171,165,170,141,32,208,141,33,208
9 DATA 232,208,253,230,170,208,241,88,169,251,141,33,208,133,170,169
10 DATA 253,141,32,208,133,171,96,234,165,212,201,5,208,3,76,91,12,165
11 DATA 212,201,4,208,53,230,170,165,170,141,33,208,76,104,12,234,234
12 DATA 234,198,170,165,170,141,33,208,234,234,234,234,232,208
13 DATA 253,200,208,250,108,0,12,234,234,234,165,211,201,4,208,244,76
14 DATA 63,12,108,128,0,234,234,234,165,2,12,201,3,208,3,76,159,12,165
15 DATA 212,201,6,208,220,230,171,165,171,141,32,208,76,104,12,234,234
16 DATA 234,198,171,165,171,141,32,208,76,104,12,234,234,234,173,0,12
17 DATA 141,20,3,173,1,12,141,21,3,88,96

```

—JAMES LINDLY, WAYNESVILLE, MO

\$584 LOW/HIGH BYTE CONVERTER 64

Both experienced and inexperienced programmers alike will find Low/High Byte Converter 64 an invaluable addition to their collection of programming utilities. This program adds two new Direct Mode commands that make working with two-byte values a breeze.

The first command, ↑ (followed by a number), instantly converts a number into low byte/high byte format. The second command, / (number), peeks a two-byte pointer (vector) and displays its address in memory. For example, if you want

to know the address of the IRQ vector, just enter / 788, and it'll be displayed for you.

```

0 REM 64 LOW/HIGH BYTE CONVERTER - RICHARD PENN
1 D$=":20-256*INT(O/256);:INT(O/256)" + CHR$(0)+"?:P{SHFT E}(O)+256*P{SHFT E}(O+1)" + CHR$(0)
2 FORT=1 TO LEN(D$):POKE819+T,ASC(MID$(D$,T,1)):NEXT
3 FOR U= 679 TO 756:READ Q:POKE U,Q:CK=CK+Q:NEXT
4 IF CK<>9012 THEN PRINT "ERROR IN DATA STATEMENTS...":END
5 POKE 772,167:POKE 773,2:PRINT "{SHFT CLR}{UP ARROW} (NUMBER) CONVERTS TO LOW/HIGH BYTE"
6 PRINT "/ (NUMBER) DISPLAYS VECTOR ADDRESS"
7 DATA 72,138,72,173,0,2,201,94,208,15,32,214,2,232,189,52,3,157,7,2
8 DATA 208,247,76,208,2,201,47,208,12,32,214,2,232,189,84,3,157,7,2
9 DATA 208,247,104,170,104,76,124,165,162,255,232,189,0,2,208,250,169
10 DATA 58,157,0,2,232,224,8,144,248,169,79,141,0,2,169,61,141,1,2,162
11 DATA 255,96

```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$585 FAST MODE VIA CAPS LOCK

If you use your C-128 a lot, you'll appreciate this short program that accesses the C-128's Fast mode while you're in C-64 mode! Simply run the program below and depress the caps-lock key. To return to Slow mode and get your screen back, unlock the caps-lock key. This program is great for performing complex math functions or for reducing the amount of time it takes to get lots of machine language into memory.

```

0 REM FAST MODE VIA CAPS LOCK CHRIS REYNOLDS
1 FOR A = 828 TO 863:READ B:POKE A,B:CK=CK+B:NEXT
2 IF CK<>3654 THEN PRINT "ERROR IN DATA STATEMENTS...":END
3 SYS 828
4 DATA 120,169,74,141,20,3,169,3,141,21,3,88,96,234,165,1,41,64,240,8
5 DATA 169,0,141,48,208,76,49,234,169,3,141,48,208,76,49,234
6 PRINT CHR$(147)"PRESS CAPS LOCK TO ACCESS FAST MODE"
7 PRINT "PRESS IT AGAIN TO DEACTIVATE."

```

—CHRIS REYNOLDS, LISMORE, NEW SOUTH WALES, AUSTRALIA

\$586 CALLING ALL CHARACTERS!

Getting all the upper- and lowercase letters and graphics characters displayed on the C-64 screen at the same time is ▶

MAGIC

no small feat. My C-64 program, Lowercase in Reverse Uppercase, lets you print lowercase letters along with the normal uppercase letters. It also displays on the screen characters produced by pressing the Commodore or shift key with any alphabet key.

When you run the program, press control/9 to access the lowercase characters. When this program is active, the cursor is invisible in Direct mode. Just press the Commodore and shift keys or enter PRINT CHR\$(14) to display the cursor.

```

Ø REM C-64 LOWERCASE IN REVERSE UPPERCASE
- CHRIS REYNOLDS :REM*72
1Ø FOR T=49152 TO 4922Ø:READ D:POKE T,D:CK
=CK+D:NEXT :REM*192
2Ø IF CK<>9197 THEN PRINT"ERROR IN DATA ST
ATEMENTS..." :END :REM*77
3Ø SYS 49152 :REM*2Ø4
4Ø DATA 12Ø,169,115,133,1,189,Ø,2Ø8,157,Ø,
48,232,2Ø8,247,238,7,192,238 :REM*235
5Ø DATA 1Ø,192,173,1Ø,192,2Ø1,64,2Ø8,234,1
69,2Ø8,141,7,192,169,48,141 :REM*181
6Ø DATA 1Ø,192,169,119,133,1,88,162,2Ø8,18
9,7,56,157,7,52,2Ø2,2Ø8,247 :REM*25
7Ø DATA 169,Ø,162,8,157,255,52,2Ø2,2Ø8,25Ø
,169,28,141,24,2Ø8,96 :REM*88

```

—CHRIS REYNOLDS, LISMORE,
NEW SOUTH WALES, AUSTRALIA

\$587 WORD WRAP 64/128

As I was developing a text adventure, I realized that I needed to print rather long words (strings) to the screen without their breaking at the end of the line. I wrote this short word-wrap routine to solve this problem, and it works on both the 64 and 128. Just put your text after A\$, as shown in the program. To use the program in 80-Column mode, change the value of C in line 30 to 79.

```

Ø REM WORDWRAP 64 & 128 - JEFF PANICI :REM*225
1Ø REM PASS STRING IN A$ TO SUBROUTINE :REM*226
2Ø PRINTCHR$(147):GOTO9Ø :REM*222
3Ø L=LEN(A$):X=1:C=39:REM C=79 FOR 8Ø COLU
MN :REM*88
4Ø W$="" :REM*11
5Ø L$=MID$(A$,X,1):W$=W$+L$:X=X+1:IFL$=" "
ORX>LTHENGOTO7Ø :REM*99
6Ø GOTO5Ø :REM*19Ø
7Ø PRINTCHR$((POS(.)+LEN(W$)>C)*-13);W$;:I
FX>LTHENRETURN :REM*222
8Ø GOTO4Ø :REM*2Ø8
9Ø REM SAMPLE TEXT STRING :REM*115
1ØØ A$="THIS IS A SAMPLE STRING OF TEXT TH
AT WON'T BREAK ON THE BORDER WHEN" :REM*83
11Ø A$=A$+" PRINTED TO THE SCREEN WITH WOR
DWRAP 64 & 128.":GOSUB3Ø :REM*193

```

—JEFFREY PANICI, SANDWICH, IL

\$588 DATA STATEMENTS MADE EASIER

To facilitate typing in Data statements on your C-64, I wrote F1 Key Enhancer. After you run the program, press

the F1 key to print a line number followed by the word DATA; then type in the data for that line. When you reach the end of the line, don't press the return key. Instead, press F1 again, and it will automatically advance to the next line, complete with a new line number and the word DATA. As written, the program defaults to a line number increment of 10, which is perfect for typing in most Magic listings, as well as many other programs.

When you've finished typing in all the Data statements, just press return to get back to Direct mode.

```

Ø REM 64 F1 KEY ENHANCER - DAN GOODELL :REM*2Ø9
1Ø FORT=53ØØØ TO 53112:READ D:POKE T,D:CK=
CK+D:NEXT :REM*89
2Ø IF CK <> 12436 THENPRINT"ERROR IN DATA
STATEMENTS..." :END :REM*194
3Ø PRINTCHR$(147)"TOGGLE F1 KEY WITH SYS 5
3ØØØ" :REM*79
31 SYS 53ØØØ :REM*148
1ØØ DATA 24,144,16,1,Ø,1,Ø,Ø,13,48,49,48,4
8,68,65,84,65,32,1,12Ø,174,2Ø :REM*169
11Ø DATA 3,172,21,3,173,119,2Ø7,141,2Ø,3,1
73,12Ø,2Ø7,141,21,3,142,119 :REM*1Ø6
12Ø DATA 2Ø7,14Ø,12Ø,2Ø7,88,96,165,197,2Ø5
,26,2Ø7,24Ø,57,141,26,2Ø7,2Ø1 :REM*6
13Ø DATA 4,2Ø8,5Ø,162,3,189,12,2Ø7,9,48,15
7,17,2Ø7,2Ø2,16,245,16Ø,246 :REM*49
14Ø DATA 185,26,2Ø6,32,53,235,2ØØ,2Ø8,247,
174,11,2Ø7,248,16Ø,2,185,12 :REM*23
15Ø DATA 2Ø7,24,1Ø5,1,41,15,153,12,2Ø7,2Ø8
,3,136,16,24Ø,216,2Ø2,2Ø8,233 :REM*238
16Ø DATA 76,54,2Ø7 :REM*181

```

—DAN GOODELL, CONCORD, CA

\$589 GET RID OF BORING GETS

Rather than staring at a dull screen while awaiting input, make the C-64's screen border come alive with colors! After running my program, simply put SYS 49152 before every Get statement in your own programs—your screens will never look dull again!

```

Ø REM BORING GET IS GONE - MICHEAL GRIMM :REM*79
1Ø FORT= 49152 TO 49167:READD:POKE T,D:NEX
T :REM*235
2Ø PRINTCHR$(147)"PRESS A KEY":SYS49152:GE
TAS:IF A$=CHR$(32)THEN A$="SPACEBAR" :REM*65
3Ø IF A$=CHR$(13)THEN A$="RETURN" :REM*9Ø
4Ø PRINTCHR$(147)"YOU PRESSED ";A$ :REM*97
5Ø DATA 169,Ø,141,198,Ø,238,32,2Ø8,173,198
,Ø,2Ø1,Ø,24Ø,246,96 :REM*23Ø

```

—MICHAEL GRIMM, SANDWICH, IL

\$58A C-128 GAME PROMPT

You may have admired games where words were displayed on the screen in quadruple-sized characters to draw attention. Here's an easy-to-learn technique for including similar prompts in your own C-128 games. Just use the Ready Routine in 40-Column mode. It prints the word READY and

MAGIC

plays a little ditty. Try changing the prompt and music to suit your own games.

```

0 REM C-128 READY! ROUTINE - JEFFREY PANIC
I                                     :REM*175
10 GRAPHIC1,1:COLOR0,1:COLOR4,1:GRAPHIC0:S
  CNCLR:DIM CL(6),G$(8):COLOR5,1 :REM*47
20 GRAPHIC2,0,1:FORS=1TO8:BOX0,0,0,24,21,0
  ,1:A$=MID$("READY!",S,1):CHAR0,1,1,A$:S
  SHAPE G$(S),1,1,24,21:SPRSV G$(S),S:NE
  XT:GRAPHIC. :REM*98
30 A$="O2T1GABCDE#FGG#FEDCBAG":FORX=1TO5:S
  PRITEX,1,2,,1,1,0:NEXT :REM*217
40 FORX=1TO5:MOVSPRX,20*X+102,140:NEXT:CHA
  R,16,15,"{CTRL 7}PLAYER 1":PLAYA$
                                     :REM*169
50 FORX=1TO50:POKE53248+21,,:SLEEP.9999999
  99:POKE53248+21,255:NEXT :REM*138
60 RESTORE60:FORJ=1TO6:READCL(J):NEXT:DATA
  7,15,4,2,7,1 :REM*67
70 J=1:DO:FORX=1TO5:SPRITEX,1,CL(J):NEXTX:
  J=J+1:LOOPUNTILJ=6:FORJ=1TO6:COLOR5,CL(
  J):CHAR,16,15,"PLAYER 1":SLEEP1:NEXT:CH
  AR,15,15,"{9 SPACES}" :REM*97
80 POKE53248+21,0:PRINT"{CTRL 2}" :REM*158
  
```

—JEFFREY PANICI, SANDWICH, IL

\$58B ACCESSING 1581 PARTITIONS

If you've tried accessing 1581 disk partitions from within applications software without success, try this. As a demonstration, I'll show you how it's done with RUN's word processor, RUN Script. Select the Disk Command option (F1,>) and enter: /partition name. Accessing the directory will then reveal the partition's contents.

To return to the drive's root directory, select the Disk Command option again and enter /. The syntax is the same, whether you're using a C-64 or a C-128. Experiment for a while with this technique and a partitioned 3½-inch disk, and I think you'll find that it's a truly helpful trick to have on hand.

—TIM WALSH, MAGIC COLUMNIST ■

Magic is a forum wherein RUN's imaginative and inventive readers may share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea that you have found makes computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send in your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

TAXPERFECT™ Get TaxPerfect™ now and relax on April 15th...

- SEVENTH SUCCESSFUL YEAR! • MANY THOUSANDS ALREADY IN USE!
- Your Simple Answer to the Tax Reform Act of 1986 (As Amended)

- TaxPerfect is the quick, correct, easy way to do your taxes • Absolutely up-to-date with the Tax Reform Act of 1986 and all new tax changes • Simplest tax return preparation program available — at any price • Single-keystroke form-to-form change • Automatically calculates and transfers data from every FORM and Schedule to FORM 1040 • Simply answer the questions — TaxPerfect calculates return, tax due or amount of refund due you • Automatically elects the greater of Standard or Itemized deductions • Prints data to all FORMS or Schedules you need for your complete return — ready to sign and file • Highly acclaimed by tax pros, CPA's and tax preparers, TaxPerfect is easy to understand and a pleasure to work with. Available for Commodore 64 and Commodore 128.
- TaxPerfect is fully screen-prompted, menu-driven and easy to use. System includes comprehensive User's manual with helpful tutorial example.
- With a single keystroke, TaxPerfect instantly recalculates your entire return when you change any item.
- TaxPerfect also prints directly onto IRS forms.
- TaxPerfect data files can be stored on disk.
- TaxPerfect yearly updates are available at 50% discount to registered TaxPerfect users.
- TaxPerfect is an essential addition to your personal software library — and best of all, it's tax deductible.

TAX PLANNING

- Most powerful program features available — at any price • Supports RAMdisk • Prints the input sheets to organize your data • Built-in calculator feature accumulates input and enters total • 32 PF key functions achieved with 1 or 2 keystrokes • Fast, complete tax calculations — 20 forms in under 2 seconds (most returns in under 1 second) • On-line pop-up Help menus • Full calculation-override capability • Follows IRS text & line #s exactly • Exclusive context-sensitive Datacheck™ pinpoints omissions — and alerts you to effects of your input • Our exclusive Current Values Display constantly reflects all changes with your input • In Planning Mode all unnecessary text input prompts are eliminated. Only numeric input is prompted for.

RETURN PREPARATION

TaxPerfect PRINTS THE INCOME TAX RETURN FOR YOU: TaxPerfect 64 — prints page 1 & page 2 of the FORM 1040 and Schedules A,B,C,D,E and SE as well as FORM 2441, 3903 and 6251 on standard IRS government forms or on blank computer paper for use with transparent overlays. TaxPerfect 128 — supports all of the above forms plus Schedules F and R and FORMS 2106, 2119, 2210, 3800, 4136, 4255, 4562 and 4684. All other forms and schedules are considered in the calculation. TaxPerfect features direct screen input using fast ten-key style on the Commodore 128.

FULL-FEATURED DEPRECIATION SUPPORT

Self-contained Depreciation program calculates and prints complete listing of depreciable assets... all classes... any length life... traditional methods plus "old" rules, ACRS, MACRS... Half-year, mid-quarter & mid-month conventions. Schedule of assets attaches as a detailed, printed supplement to the FORM 4562.

Commodore 64 and Commodore 128 are TRADE-MARKS of Commodore Business Machines Corp.

Complete 1989 Edition:

TaxPerfect 64 \$89

TaxPerfect 128 \$99

TO ORDER Call Toll Free 1-800-525-5611 24 Hrs. from anywhere outside Dallas. In Dallas Call 214/386-6320. MasterCard, VISA, Money Orders, Bank Checks and COD Orders Accepted (add 3% surcharge for credit card processing) (Texas residents add 8% sales tax) (add \$5.00 for COD) (\$5.00 Shipping)

Financial Services Marketing Corporation • 500 North Dallas Bank Tower • 12900 Preston Road • Dallas, Texas 75230

RUN

THE COMMODORE 64/128 USER'S GUIDE

April 1990
An IDG
Communications
Publication

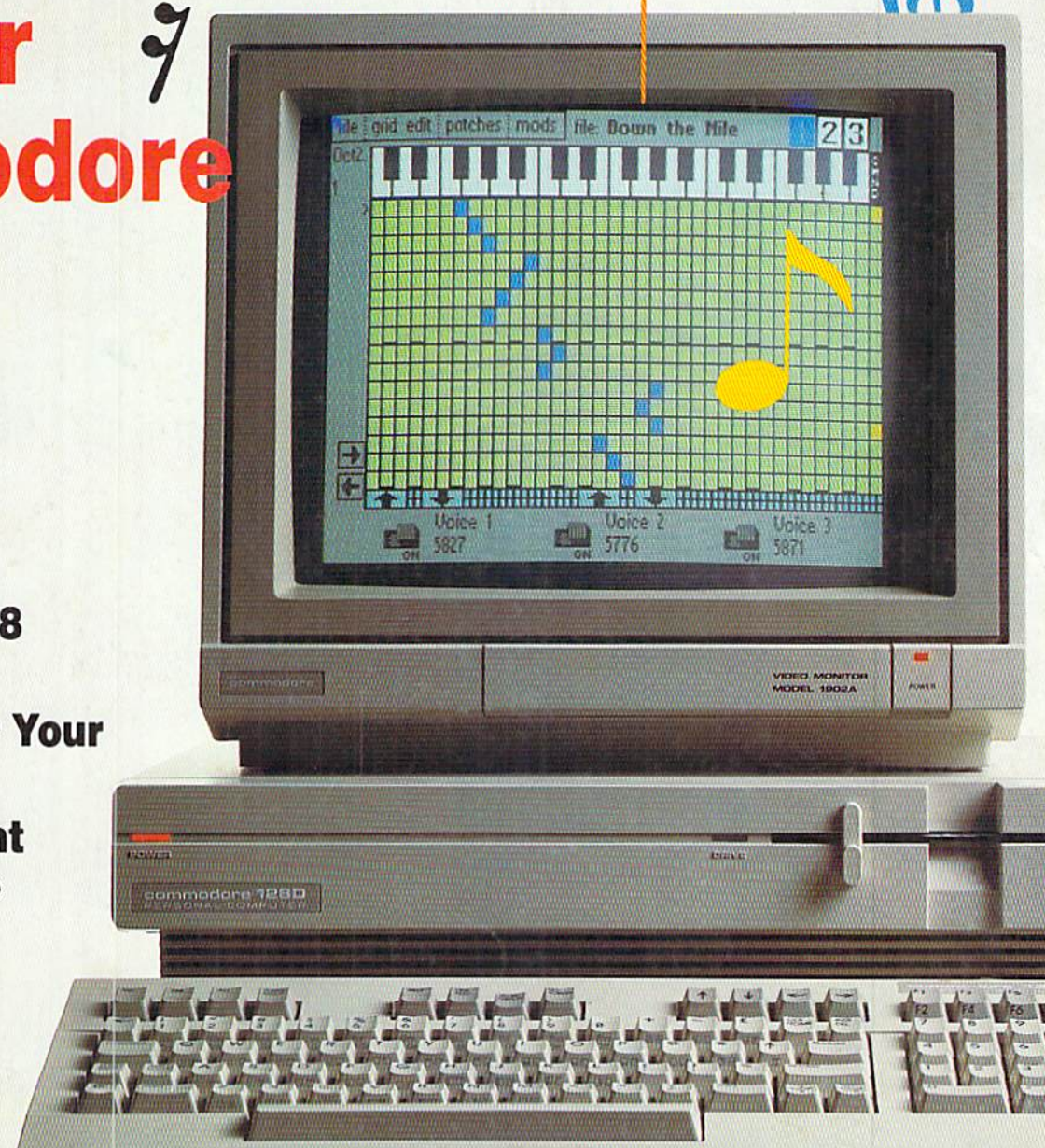
U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

CREATE MUSIC On Your Commodore

Consumer
Electronics
Show Report

Plus:

- ▶ Add 4 New C-128 Commands
- ▶ Make a Date for Your Program
- ▶ Choose the Right GEOS Hardware
- ▶ And More!



MAGIC

Create wild and wonderful screen displays with four different screen and title routines, and selectively list C-64 directories by file types.

By TIM WALSH

\$58C TITLE BOUNCER 64

Perk up your title screens with the title subroutine, Title Bouncer 64. Put your own title into T\$ and run the program, then sit back and watch the title bounce up and down. The range of each bounce shrinks until it gets to the center of the screen, then starts over.

```
Ø REM BOUNCING TITLES 64 - JEFFREY PANICI :REM*93
1Ø POKE 53281,Ø:POKE 5328Ø,Ø:PRINTCHR$(147 :REM*76
):T$="*** YOUR TITLE HERE ***"
2Ø DEF FNT(X)=(4Ø-LEN(T$))/2 :REM*76
3Ø Y=23:X1=1:X2=23:POKE 214,Y:PRINT:PRINT :REM*92
TAB(FNT(.))T$
4Ø FOR I=X2 TO X1 STEP-1:PRINTCHR$(147):PO :REM*184
KE 214,I:PRINT:PRINTTAB(FNT(.))T$
5Ø FOR P=1 TO 2:NEXT:POKE 646,INT(RND(1)*( :REM*153
16-2)+2):NEXT:X2=X2-1
6Ø IF X2=12 THEN 2Ø :REM*2Ø1
7Ø FOR I=X1 TO X2:PRINTCHR$(147):POKE 214, :REM*17Ø
I:PRINT:PRINTTAB(FNT(.))T$
8Ø FOR P=1 TO 2:NEXT:POKE 646,INT(RND(1)*( :REM*47
16-2)+2):NEXT:X1=X1+1
9Ø GOTO 4Ø :REM*218
```

—JEFFREY D. PANICI, SANDWICH, IL

\$58D BORDER LIGHTS 64/128

Border Lights 64/128 cycles multicolored lights along the 40-column screen border of your C-64 or C-128. When you append it to Sway 64/128, the following trick, it makes for a great screen display.

```
Ø REM BORDER LIGHTS 64/128 - TONY EBERLE :REM*71
1Ø POKE5328Ø,Ø:POKE53281,Ø:C=81:X=.:GOTO1Ø :REM*49
Ø
2Ø FORD=1Ø24TO1Ø63:POKED,C:NEXT:FORD=11Ø3T :REM*144
O2Ø24STEP4Ø:POKED,C:NEXT
3Ø FORD=2Ø24TO1984STEP-1:POKED,C:NEXT:FORD :REM*41
=1984TO1Ø24STEP-4Ø:POKED,C:NEXT
4Ø FORD=55296TO55335:POKED,X:NEXT:FORD=553 :REM*1
75TO56295STEP4Ø:POKED,X:NEXT
5Ø FORD=56295TO56256STEP-1:POKED,X:NEXT:FO :REM*22
RD=56256TO55296STEP-4Ø:POKED,X:NEXT
6Ø X=X+1:IFX>254THENX=1 :REM*5
7Ø GETA$:IF A$="" THEN RETURN :REM*252
8Ø END :REM*2Ø8
9Ø RETURN :REM*232
```

```
1ØØ PRINTCHR$(147) :REM*51
11Ø PRINTTAB(1Ø)"{CRSR DN}64/128 BORDER LI :REM*241
GHTS":PRINTTAB(12)"{2 CRSR DNs}BY{2 SP
ACES}TONY EBERLE"
12Ø PRINT:PRINT:PRINT:PRINTTAB(1Ø)"PRESS A :REM*31
KEY TO QUIT.":GOSUB2Ø
13Ø GOSUB4Ø :REM*5
14Ø GOTO13Ø :REM*21Ø
```

—TONY EBERLE, SANDWICH, IL

\$58E SWAY 64/128

Make the whole C-64 or C-128 40-column screen sway with Sway 64/128. Use it as a stand-alone program or as a subroutine in your own programs.

```
Ø REM SWAY 64/128 - TONY EBERLE :REM*178
1Ø POKE 5328Ø,Ø: POKE 53281,Ø:PRINTCHR$(14 :REM*252
7)
2Ø PRINTTAB(5)"{2 CRSR DNs}{2 SPACES}{SHFT :REM*37
U}{2 SHFT Cs}{5 SHFT *s}{12 SHFT Cs}{S
HFT I}"
3Ø PRINTTAB(6)" {SHFT B}{4 SPACES}SWAY 64/ :REM*163
128{4 SPACES}{SHFT B}":PRINTTAB(5)"{2 S
PACES}{SHFT J}{5 SHFT *s}{14 SHFT Cs}{S
HFT K}"
4Ø PRINT"{2 CRSR DNs}WORKS IN C-128 4Ø-COL :REM*15Ø
UMN MODE, TOO!"
5Ø PRINTTAB(11)"{2 CRSR DNs}BY TONY EBERLE :REM*214
"
6Ø FORLR=ØTO7:POKE5327Ø,(PEEK(5327Ø)AND248 :REM*1Ø8
)+LR:NEXTLR
7Ø FORRL=7TOØSTEP-1:POKE5327Ø,(PEEK(5327Ø) :REM*184
AND248)+RL:NEXTRL:GOTO6Ø
```

—TONY EBERLE, SANDWICH, IL

\$58F TEXT COLOR SCRAMBLER 64

Use Text Color Scrambler 64 to cycle the C-64's 16 colors through all the bytes on the screen. Turn on the effect by entering SYS 49152 and turn it off with SYS 49217.

The cycling runs fast enough to make reading screen text difficult, so it's best to use this routine with large letters and graphics. Appending this trick to Border Lights (trick \$58D above) also gives you a super screen display.

```
Ø REM TEXT COLOR SCRAMBLER 64 - FREDRIC PU :REM*2
LLIAM
1Ø FOR T=49152 TO 49231:READ D:POKE T,D:NE :REM*2Ø
XT
2Ø DATA 169,255,141,14,212,141,15,212,169, :REM*161►
128,141,18,212,12Ø,173,2Ø,3
```


MAGIC

```
30 DATA 141,38,192,173,21,3,141,39,192,169
,40,141,20,3,169,192,141,21,3 :REM*145
40 DATA 88,96,234,234,162,0,173,27,212,157
,0,216,157,0,217,157,0,218 :REM*160
50 DATA 157,0,219,232,224,0,208,236,108,38
,192,120,173,38,192,141,20,3 :REM*239
60 DATA 173,39,192,141,21,3,88,96 :REM*20
```

—FREDRIC PULLIAM, BUTTE, MT

\$590 LINE FREEZE 64

Line Freeze 64 "freezes" the first six rows at the top of the C-64 screen so that text and data you need to refer to won't be accidentally erased.

To freeze up to six lines, multiply the number of lines you want to freeze by 40, then Poke that value into location 49182. For instance, to freeze six lines, run Line Freeze 64, then enter POKE 49182,240 followed by SYS 49152. "Thaw out" frozen screen lines with SYS 49220.

```
0 REM SIX-LINE FREEZE 64 - FREDRIC PULLIAM
:REM*65
10 FOR T=49152 TO 49235:READ D:CK=CK+D:POK
E T,D:NEXT :REM*49
20 IF CK<> 9252 THEN PRINT "ERROR IN DATA.
..":END :REM*197
30 DATA 76,31,192,120,173,20,3,141,28,192,
173,21,3,141,29,192,169,48,141 :REM*80
40 DATA 20,3,169,192,141,21,3,88,96,234,23
4,40,160,0,204,30,192,240,221 :REM*62
50 DATA 185,0,4,153,83,192,200,76,33,192,1
60,0,204,30,192,240,10,185,83 :REM*11
60 DATA 192,153,0,4,200,76,50,192,108,28,1
92,120,173,28,192,141,20,3,173 :REM*227
70 DATA 29,192,141,21,3,88,96,234 :REM*96
```

—FREDRIC PULLIAM, BUTTE, MT

\$591 FILE TYPE DIRECTORY 64

File Type Directory 64 lets you select directory listings based on file types. [C-128 users should see Mark Jordan's 128 Mode column elsewhere in this issue for a discussion of the 128's Directory command.—Eds.] After entering, saving, and running File Type Directory 64, enter SYS 49152,X, where X is one of the following letters: P (Program files); S (Sequential files); U (User files); R (Relative files); and A (All files).

Pressing the Commodore logo, shift or shift-lock key pauses the directory as it lists to the screen. Because this program works in Program as well as Direct mode, you can use it as a specialized subroutine in your own programs.

```
0 REM FILE TYPE DIRECTORY 64{2 SPACES}- MI
CHAEAL MYERS :REM*182
10 FOR T=49152 TO 49385:READ D:POKE T,D:CK=
CK+D:NEXT :REM*163
20 IF CK<> 33370 THEN PRINT "ERROR IN DATA
...":END :REM*234
30 Y=1:FOR I=1 TO 5:A$=MID$("PRGSEQRELUSRA
LL",Y,3) :REM*73
40 PRINT "SYS 49152,"LEFT$(A$,1);": FOR ";A
$;" FILES" :REM*45
50 Y=Y+3:NEXT:END :REM*202
60 DATA 32,115,0,133,251,141,224,192,32,11
5,0,169,36,133,169,169,48,133 :REM*125
```

```
70 DATA 170,169,2,162,169,160,0,32,189,255
,169,8,162,8,160,0,32,186,255 :REM*88
80 DATA 32,192,255,162,8,32,198,255,32,207
,255,32,207,255,169,18,32,210 :REM*55
90 DATA 255,169,255,133,252,133,253,160,0,
32,207,255,72,32,183,255,201 :REM*128
100 DATA 64,240,109,104,153,234,192,200,19
2,32,208,236,230,252,240,31 :REM*195
110 DATA 165,251,201,65,240,14,160,22,200,
185,234,192,201,32,240,248,197 :REM*57
120 DATA 251,208,210,174,234,192,173,235,1
92,32,205,189,56,32,240,255,24:REM*169
130 DATA 160,4,32,240,255,230,253,160,0,16
2,4,189,234,192,201,34,240,3 :REM*228
140 DATA 232,208,246,32,210,255,232,189,23
4,192,200,192,19,208,244,173,1:REM*223
150 DATA 193,201,32,240,3,32,63,171,169,1,
160,193,32,30,171,169,13,32 :REM*172
160 DATA 210,255,173,141,2,208,251,240,134
,104,169,8,32,195,255,32,204 :REM*45
170 DATA 255,174,234,192,173,235,192,32,20
5,189,169,217,160,192,32,30 :REM*147
180 DATA 171,166,253,169,0,32,205,189,96,3
2,70,82,69,69,46,32,80,45,70 :REM*6
190 DATA 73,76,69,83,58,32,0 :REM*228
```

—MICHAEL MYERS, BEARDSTOWN, IL

\$592 MATH QUIZ 64/128

Sharpening multiplication skills needn't be boring for a child. Math Quiz 64/128 makes the drill fun. Type in and save the program, then run it in 64 or 128 mode (40 or 80 columns). Random multiplication problems appear, and the child must enter the correct answer to move on to the next problem, and he or she can quit the program after giving a correct answer.

```
0 REM 64/128 MATH QUIZ - STEVE KOOPS
:REM*61
5 CLR:A$=CHR$(32):B$="":C$="":REM*226
10 A=INT(RND(0)*99)+1:A=INT(A/10) :REM*73
20 B=INT(RND(0)*99)+1:B=INT(B/10) :REM*56
30 PRINTA$;A;B$;B;C$ :REM*90
40 INPUT"ENTER THE ANSWER";D :REM*156
50 C=A*B :REM*144
60 IF D=C THEN 80 :REM*94
70 PRINT"WRONG":GOTO30 :REM*176
80 PRINT"CORRECT!{2 SPACES}DO YOU WANT ANO
THER?" :REM*171
90 GETA$:IFA$="" THEN 90 :REM*117
100 IF A$="Y"GOTO 5 :REM*118
```

—STEVE KOOPS, ROYAL OAK, MI ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

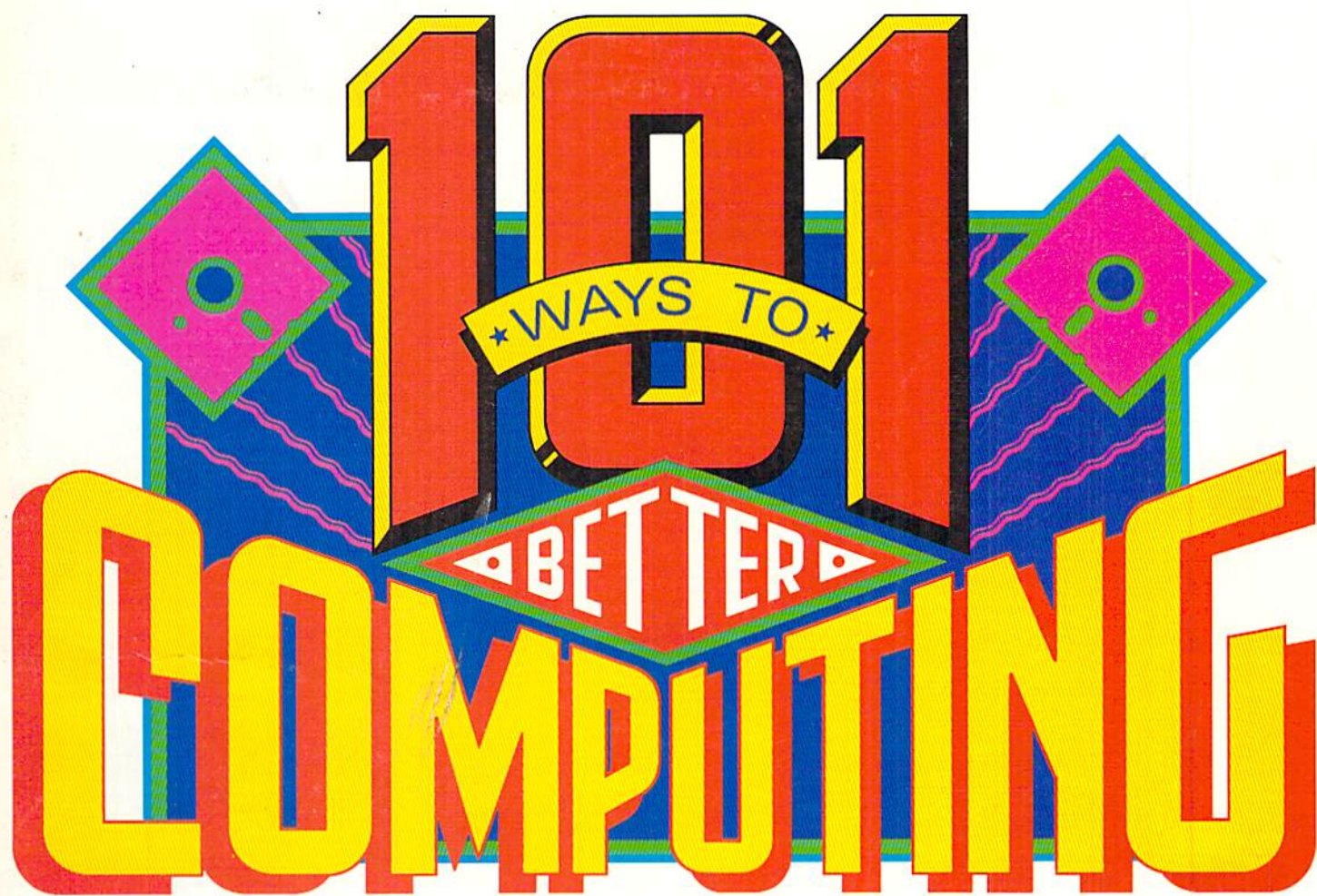
RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

RUN

THE **COMMODORE** 64 / 128 USER'S GUIDE

May 1990
An IDG
Communications
Publication

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00



Plus:

- RUN Copy 128
- Word-Wrap for Basic
- The Secret Behind Smallware
- C-64 Car Race Action
- And More!



MAGIC

Scrolling raster stripes, magic number squares, and a program to conquer disk-error problems.

By TIM WALSH

\$593 RASTER STRIPES 64

Raster Stripes 64, a unique raster interrupt, uses scrolling stripes to animate the C-64's screen without affecting the operation of most Basic programs. When adding the raster routine to your own programs, you may change the default gray colors of the scrolling color stripes. Use this command:

```
SYS 49196,C1,C2,C3,C4
```

where C1, C2, C3 and C4 are the value (0-15) colors of the four stripes.

POKE 56591,81 turns on the raster's movement and POKE 56591,80 turns it off. To change the speed and direction of the stripes, enter POKE 56580,X. A value of X greater than 99 makes the stripes scroll down and values less than 99 make them scroll up.

```
Ø REM RASTER STRIPES 64 - JEFFREY PANICI
:REM*63
1Ø FORT=49152 TO 49273:READ D:POKE T,D:NEX
T:REM*196
2Ø DATA 72,138,72,152,72,164,2,2ØØ,192,16,
2Ø8,2,16Ø,Ø,132,2,185,28,192:REM*176
3Ø DATA 141,33,2Ø8,141,33,2Ø8,76,81,254,1,
3,6,14,1,3,6,14,1,3,6,14,1,3,6:REM*36
4Ø DATA 14,32,155,183,134,251,32,155,183,1
34,252,32,155,183,134,253,32:REM*153
5Ø DATA 155,183,134,254,165,251,141,28,192
,141,32,192,141,36,192,141,4Ø:REM*253
6Ø DATA 192,165,252,141,29,192,141,33,192,
141,37,192,141,41,192,165,253:REM*63
7Ø DATA 141,3Ø,192,141,34,192,141,38,192,1
41,42,192,165,254,141,31,192:REM*2Ø
8Ø DATA 141,35,192,141,39,192,141,43,192,9
6,153:REM*239
9Ø POKE 53281,..:POKE 2,..:POKE 792,..:POKE 7
93,192:REM*43
1ØØ SYS 49196,1,11,12,15:REM*228
11Ø POKE 5658Ø,1ØØ:POKE 56581,1:POKE 56582
,..:POKE 56583,..:REM*155
12Ø POKE 56589,13Ø:POKE 5659Ø,17:POKE 5659
1,81:REM*24
13Ø PRINTCHR$(147)"(CTRL 8)THIS PROCESS GI
VES A 3-D EFFECT":REM*11
14Ø PRINT"WHEN TEXT IS ADDED TO THE SCREEN
!":REM*16
```

—JEFFREY D. PANICI, SANDWICH, IL

\$594 MAGIC SQUARE 128

Here's a unique trick for the C-128's 80-column screen. When you run Magic Square 128, enter an odd number

from 3 to 9. A square made up of numbers in rows and columns will appear, with the number you chose determining the size of the matrix (e.g., entering 3 will make a square three numbers across and three down). It's called Magic Square 128 because the sums of all rows and columns and both diagonals are the same! Study the Basic listing to unlock the key to this bit of Magic.

```
Ø REM MAGIC SQUARE 128 - HENRY LANGSTON
:REM*141
1Ø FAST:SCNCLR:X=INT(RND(Ø)*9):CHAR,28,8,"
M A G I C{2 SPACES}S Q U A R E S":CHAR,
22,16,"SELECT SQUARE SIZE":CHAR,22,18,"
ENTER AN ODD NUMBER FROM 3 TO 9":REM*8Ø
2Ø CHAR,22,2Ø,"EVEN NUMBERS GO TO NEXT OD
D NUMBER":GETKEYN$:N=VAL(N$):IF N<3ORN>
9 THEN 1Ø:ELSE SCNCLR:IF N=INT(N/2)*2 T
HEN N=N+1:REM*242
3Ø WINDOW 41-N*2,12-N,79,24:C=INT(N/2)+1:R
=1:FORL=1TON*N:S(C,R)=L+X:IF L/N=INT(L/
N)THEN R=R+1:GOTO4Ø:ELSE C=C+1:R=R-1:IF
C=N+1THEN C=1:ELSE IF R=ØTHEN R=N
:REM*1Ø6
4Ø NEXT:FORL=1TON:FORK= 1 TO N: IF S(K,L)<
1Ø THENPRINT" ";:REM*232
5Ø PRINTS(K,L);:NEXT:PRINT:PRINT:NEXT:WIND
OWØ,Ø,79,24:CHAR,29,24,"PRESS A KEY FOR
REPLAY":GETKEY I$:GOTO1Ø:REM*48
```

—HENRY LANGSTON, KISSIMMEE, FL

\$595 DISK SALVAGE 64

Bad disk errors are troublesome at best, and potentially destructive to data, programs and anything else saved to a disk containing them. One or more bad sectors are usually the cause. But then, what can you do about it?

The answer is Disk Salvage 64. This C-64 program checks every track and sector on any 1541- or 1571-formatted disk to find any errors. All bad sectors are allocated so that further disk damage won't occur. Once it's finished, you can copy most files onto a new work disk, using a copy utility, and the original error-prone disk can then be reformatted.

```
Ø REM DISK SALVAGE 64 - SAUL BETESH:REM*8Ø
1Ø C$=CHR$(147):PRINTC$"INSERT A DISK AND
PRESS A KEY":REM*164
2Ø GETA$:IF A$=""THEN 2Ø:REM*212
3Ø DIM ET(1ØØ),ES(1ØØ),EM(1ØØ):REM*177
4Ø X=1:PRINTC$:REM*226
5Ø OPEN15,8,15,"U;":OPEN 2,8,2,"#":REM*21
6Ø GOSUB 19Ø:IF EF THEN END:REM*249
7Ø FOR T= 1 TO 35:FOR S= Ø TO 2Ø+2*(T/17)+
(T>24)+(T>3Ø):REM*219▶
```


GEOS USERS

On June 15, 1990, Berkeley Softworks' GEOBASIC will finally be released to the programming public for just \$39.95, postage paid.

RUN readers now have the exclusive opportunity to place advance orders, guaranteeing that they will be the first to receive this long-awaited program from Berkeley Softworks.

To reserve your copy of GEOBASIC (with comprehensive operations manual), simply mail the coupon below or call **1-800-343-0728**.

☐ **YES!** Send me GEOBASIC immediately upon publication for just \$39.95.

☐ I also want First Class/UPS delivery for an additional \$2.50.

☐ Check/Money Order Enclosed (payable to *RUN* Magazine)

☐ Charge my Amex, Visa or MasterCard account:

Number _____ Expires _____

Signature _____

Name _____

Address _____

City, State, Zip _____

Please allow 4-8 weeks for delivery (2-4 weeks if First Class/UPS has been specified). Release Date: 6/15/90.

IDGG/Peterborough, publisher of *RUN*, is the licensed North American distributor of GEOBASIC. GEOBASIC software ©1990 Berkeley Softworks. Portions of GEOBASIC manual ©1990 Berkeley Softworks. GEOBASIC is a 40 column program that runs in 64 mode on the 64 or 128. GEOS is required to operate GEOBASIC.

GEOBASIC

c/o *RUN* Magazine

80 Elm Street

Peterborough, NH 03458

1-603-924-9471

1-800-343-0728

MAGIC

```
80 PRINT C$"TRACK" T"SECTOR" S"ERRORS" X-1
:REM*247
90 PRINT#15, "U1:" 2; 0; T; S:GOSUB 190 :REM*82
100 IF EF=0 THEN 140 :REM*154
110 PRINT#15, "B-F:" 0; T; S :REM*249
120 PRINT#15, "B-A:" 0; T; S :REM*90
130 ET(X)=T:ES(X)=S:EN(X)=ER:X=X+1 :REM*6
140 NEXT: NEXT: CLOSE 15 :REM*160
150 PRINT C$; "ERRORS FOUND = " X-1:PRINT
:REM*80
160 FOR J = 1 TO X-1 :REM*24
170 PRINT "ERROR=" EN(J) "T=" ET(J) "S=" ES(J)
:REM*170
180 NEXT:END :REM*41
190 INPUT#15, ER, E$, E1, E2 :REM*217
200 EF=1+(ER=0 OR ER=65 OR ER=73) :REM*247
210 RETURN :REM*97
```

—SAUL BETESH, KINGSTON, ONTARIO, CANADA

\$596 FILE SLICER 64/128

File Slicer 64/128 divides large text files downloaded from bulletin boards and on-line services into smaller segments so that they can be loaded into a word processor. It works on both the 64 and 128 with any Commodore disk drive and possesses superb accuracy even when used with massive (500-plus disk blocks) text files.

When you run the program, you'll be prompted for the name of the file to be "sliced," followed by the filenames for the new files that File Slicer creates. You'll then be asked for the total number of disk blocks in each segmented file. When the process begins, the segmented filenames automatically have the letters A, B, C, and so on appended to them. Be certain beforehand that there's sufficient room on your disk for the new files.

```
0 REM FILE SLICER 64/128 - JEFFREY PANICI
:REM*38
10 PRINT CHR$(147)"FILE SLICER 64/128"
:REM*254
20 PRINT "{2 CRSR DNs}":POKE 19,3:INPUT "FIL
E TO READ:" F$: :REM*74
30 PRINT "{CRSR DN}":INPUT "NEW FILENAME:" N
$:IF LEN(N$)>14 THEN GOTO 0 :REM*138
40 PRINT:INPUT "{CRSR DN}BLOCK'S PER FILE:"
B$:B=VAL(B$):POKE 19,,:PRINT "{2 CRSR D
Ns}": :REM*231
50 N=.:OPEN 8,8,8,F$+" ,S,R":GOSUB 120
:REM*40
60 OPEN 2,8,2,N$+" ." +CHR$(N+65)+" ,S,W":PRI
NT "{CRSR DN}WRITING ... " +N$+" ." +CHR$(N
+65) :REM*31
70 FOR X=1 TO 254*B :REM*112
80 GET#8,A$:IF ST=64 THEN CLOSE8:CLOSE2:PR
INT "{2 CRSR DNs}DONE.":END :REM*165
90 PRINT#2,A$: :REM*240
100 NEXT :REM*230
110 N=N+1:CLOSE 2:GOTO 60 :REM*240
120 OPEN 15,8,15:INPUT#15,E,E$:IF E=. THEN
RETURN :REM*199
130 PRINT E,E$,E:CLOSE 8:END :REM*226
```

—JEFFREY D. PANICI, SANDWICH, IL ■

Commodore
M A G A Z I N E

RUN

THE **COMMODORE** 64 / 128 USER'S GUIDE

An IDG
Communications
Publication

FREE
PROGRAMMER'S CARD
INSIDE!

TEST-DRIVE THE **1581** ADVANTAGE

- Holds More Data
- Powerful
- Reliable
- Partition Feature

Plus:

- Do-It-Yourself Repair
- Score a C-64 Bull's Eye!
- C-128 Screen Editor Enhancer
- Colors Galore on Your C-64!



June/July 1990

U.S.A. \$2.95

CANADA \$3.95

U.K. £2.00

MAGIC

A numeric keypad for the C-64; marquee messages; and banners of different heights.

By TIM WALSH

\$597 CLEAN SWEEP 64

Super Sweep 64 "sweeps" the screen clear in a variety of ways, and you can experiment with them. The syntax for activating Super Sweep 64 is as follows:

SYS 49152,S,T

where S is a number from 0 to 255 and determines the speed of the clearing process (the lower the number, the faster the clear). T is 0, 1 or 2 and specifies the type of clear. For instance, setting T equal to 0 will clear upwards and towards the center of the screen simultaneously, while 1 will sweep towards the center and 2 will sweep to the center and return to the line where the command originated. Clean Sweep 64 can easily be used within programs for dynamic effects, and it's fully relocatable.

Ø REM CLEAN SWEEP 64 - REINER RICHTER

```

                                :REM*132
1Ø FOR T= 49152 TO 49399:READ D:POKE T,D:C
  K=CK+D:NEXT                    :REM*228
2Ø IF CK <> 28864 THEN PRINT "ERROR IN DAT
  A...":END                      :REM*7Ø
3Ø B=49152:C=256:B=B+35:POKE B+192,B-INT(B
  /C)*C:POKE B+193,B/C          :REM*127
4Ø PRINT"ENTER SYS 49152,S,D TO CLEAR SCRE
  EN."                          :REM*89
5Ø DATA 32,241,183,232,134,2,32,241,183,13
  4,7,56,32,24Ø,255,138,72,152,72:REM*167
6Ø DATA 162,25,169,19,32,21Ø,255,169,17,2Ø
  2,2Ø8,248,169,2Ø,133,12,166,2 :REM*163
7Ø DATA 136,2Ø8,253,2Ø2,2Ø8,25Ø,169,255,13
  3,3Ø,133,32,169,215,133,31,169 :REM*52
8Ø DATA 3,133,33,162,231,16Ø,19,177,32,72,
  177,3Ø,2ØØ,145,3Ø,1Ø4,145,32 :REM*199
9Ø DATA 136,136,2Ø8,241,169,4Ø,24,1Ø1,3Ø,1
  33,3Ø,169,4Ø,24,1Ø1,32,133,32 :REM*175
1ØØ DATA 144,4,23Ø,31,23Ø,33,228,32,2Ø8,21
  5,169,7,197,33,2Ø8,2Ø9,169,2Ø :REM*26
11Ø DATA 133,3Ø,133,32,169,4,133,33,169,21
  6,133,31,162,252,16Ø,1,177,32 :REM*1Ø9
12Ø DATA 72,177,3Ø,136,145,3Ø,1Ø4,145,32,2
  ØØ,2ØØ,192,2Ø,2Ø8,239,169,4Ø :REM*178
13Ø DATA 24,1Ø1,3Ø,133,3Ø,169,4Ø,24,1Ø1,32
  ,133,32,144,4,23Ø,31,23Ø,33 :REM*54
14Ø DATA 228,32,2Ø8,213,169,7,197,33,2Ø8,2
  Ø7,169,3,133,33,169,255,133,32 :REM*41
15Ø DATA 162,15,169,32,16Ø,Ø,145,32,2ØØ,14
  5,32,169,4Ø,24,1Ø1,32,133,32 :REM*225
16Ø DATA 144,2,23Ø,33,228,32,2Ø8,232,169,8
  ,197,33,2Ø8,226,169,1,37,7,2Ø8:REM*115
17Ø DATA 5,169,17,32,21Ø,255,198,12,24Ø,3,
```

```

76,Ø,Ø,169,2,37,7,2Ø8,5,1Ø4 :REM*225
18Ø DATA 1Ø4,76,68,229,24,1Ø4,168,1Ø4,17Ø,
76,24Ø,255 :REM*43
```

—REINER RICHTER, KALLISTA, AUSTRALIA

\$598 64 NUMERIC KEYPAD

All those who've endured the agony of typing in C-64 programs made up of seemingly endless Data statements probably have longed for a numeric keypad. Well, your wait is over! 64 Numeric Keypad is a keypad program packed with useful options.

Type in and save 64 Numeric Keypad to disk. To activate it, press the control and F1 keys at the same time. It converts the U, I and O keys to 4, 5 and 6, respectively; the J, K and L keys become 1, 2 and 3; and the M key is 0. The 7, 8 and 9 keys perform as usual. For added convenience, the 0 key is now the insert-delete key, and P is the minus key. The colon key becomes the return key.

All other keys are deactivated, except for the D key and shifted A, so that the word DATA can be abbreviated when typing in Data statements. You can deactivate 64 Numeric Keypad the same way you activated it—just press control/F1.

Ø REM 64 NUMERIC KEYPAD - IVAN KRALJEVIC

```

                                :REM*118
1Ø FOR T=49152 TO 49342:READ D:POKE T,D:CK
  =CK+D:NEXT                    :REM*2
2Ø IF CK<>25665 THEN PRINT"DATA ERROR":END
                                :REM*86
3Ø SYS 49152                    :REM*2Ø4
4Ø DATA 12Ø,169,18,141,143,2,169,192,141,1
  44,2,169,Ø,141,125,192,88,96 :REM*188
5Ø DATA 173,141,2,2Ø1,3,2Ø8,21,2Ø5,142,2,2
  4Ø,52,173,145,2,48,77,173,24 :REM*211
6Ø DATA 2Ø8,73,2,141,24,2Ø8,76,112,192,2Ø1
  ,4,144,35,164,2Ø3,192,4,2Ø8 :REM*173
7Ø DATA 29,2Ø5,142,2,2Ø8,4,196,197,24Ø,17,
  173,125,192,24Ø,2,169,255,73 :REM*85
8Ø DATA 255,141,125,192,162,255,76,38,235,
  76,66,235,1Ø,2Ø1,8,144,2,169 :REM*75
9Ø DATA 6,17Ø,2Ø8,7,173,125,192,24Ø,2,162,
  8,189,115,192,133,245,189,116 :REM*64
1ØØ DATA 192,133,246,76,224,234,129,235,19
  4,235,3,236,12Ø,236,126,192,Ø :REM*155
11Ø DATA 2Ø,13,29,255,255,255,255,17,255,2
  55,255,255,255,255,69,1,255 :REM*1Ø7
12Ø DATA 255,68,255,255,255,255,255,55,255
  ,255,56,255,255,52,255,57,53 :REM*192
13Ø DATA 49,2Ø,48,5Ø,54,255,43,45,51,45,46
  ,13,255,44,255,42,59,255,1,61 :REM*29
```



```
140 DATA 94,47,255,255,4,255,32,2,255,3,25
5
:REM*235
```

—IVAN KRALJEVIC HARFORD
COCHABAMBA, BOLIVIA

\$599 MINI MARQUEE 64

Many routines have been written that make a message scroll across the C-64 screen. What sets my short machine language program, Mini Marquee 64, apart from other message-scrolling routines is that up to 175 characters move across the screen in a pixel-by-pixel format, resulting in a super-smooth, professional display.

To use it in your own programs, delete lines 70-90 and substitute your own program between lines 60 and 1999. To activate, use the commands M\$="YOUR MESSAGE" and L=line#, which is the physical screen line for the marquee to scroll across.

```
0 REM MINI MARQUEE 64 - RICHARD PENN
:REM*38
10 FOR U=679 TO 744:READ Q:POKE U,Q:CK=CK+
Q:NEXT:FOR T=1 TO 40:B$=B$+" ":NEXT:REM*90
20 IF CK <> 10433 THEN PRINT"ERROR IN DATA
...":END
:REM*201
30 DATA 120,162,192,134,252,169,0,133,251,
160,199,173,18,208,201,50,208,249
:REM*252
40 DATA 140,22,208,173,18,208,201,58,208,2
49,142,22,208,136,192,191,208,231
:REM*31
50 DATA 173,1,220,201,239,240,21,160,40,17
7,251,153,255,3,136,208,248,230:REM*135
60 DATA 251,165,251,201,69,208,204,76,172,
2,88,96
:REM*242
70 M$="INTRODUCING MINI MARQUEE! A SHORT M
L ROUTINE FOR SCROLLING"
:REM*7
80 M$=M$+" MESSAGES SMOOTHLY ACROSS THE SC
REEN...PRESS SPACEBAR TO QUIT..."
:REM*140
90 PRINTCHR$(147)CHR$(154):POKE 53281,0:PO
KE 53280,0:L=10:GOSUB 2000:END:REM*210
1999 REM DISPLAY MARQUEE SUB
:REM*27
2000 M$=B$+M$+B$:POKE 209,0:POKE 210,192:P
OKE 211,0:POKE 213,LEN(M$):PRINTM$
:REM*230
2010 C=55296+L*40:FOR T=CTOC+39:POKE T,PEEK
(646):NEXT
:REM*25
2020 S=C-54273:H=INT(S/256):POKE727,S-H*25
6:POKE 728,H
:REM*103
2030 POKE 694,50+8*L:POKE 704,PEEK(694)+9:
POKE 737,LEN(M$)-40:SYS679:RETURN
:REM*102
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$59A ADD A DRIVE 64/128

Add a Drive 64/128 is an invaluable disk utility that lets you switch a disk drive's device number from 8 to 9. Because this change is performed via software, you can furnish your

system with two drives that are not equipped with DIP switches, such as older 1541s, and configure one as device 8 and the other as device 9. Just keep a copy of Add a Drive 64/128 on a disk and run it when needed.

```
0 REM ADD A DRIVE 64/128 - JERRY DICKSON
:REM*206
10 PRINTCHR$(147)"TURN OFF FIRST DRIVE, TU
RN":PRINT"ON SECOND DRIVE."
:REM*167
20 GETA$:IFA$=""THEN20
:REM*212
30 OPEN15,8,15
:REM*138
40 PRINT#15,"M-W"CHR$(119)CHR$(0)CHR$(2)CH
R$(41)CHR$(73):CLOSE15
:REM*148
50 PRINT"{CTRL 8}NOW TURN ON FIRST DRIVE."
:REM*216
:END
```

—JERRY DICKSON, SANDWICH, IL

\$59B BANNER 64

Banner 64 prints banners in eight different heights, using any character or graphics symbol. At the first prompt, enter your message, and at the second enter the height of the message, from 1 to 8.

Banner 64 works with virtually any printer and can be used with custom character sets that are stored beginning at location 12288.

```
0 REM BANNER 64 - JAY TAPLIN
:REM*225
10 OPEN4,4:PRINT#4,CHR$(27);CHR$(86);CHR$(
14):IF(PEEK(251)AND255)=99THEN50
:REM*182
20 POKE52,48:POKE56,48:POKE56334,PEEK(5633
4)AND254:POKE1,PEEK(1)AND251
:REM*201
30 FORI=0 TO 2040:POKE12288+I,PEEK(I+53248):
NEXT:POKE1,PEEK(1)OR4
:REM*73
40 POKE56334,PEEK(56334)OR1:POKE251,99
:REM*162
50 INPUT"MESSAGE";W$:INPUT"HEIGHT";H:R$="{
CTRL 9}{10 SPACES}{CTRL 0}":I$="{10 SPA
CES}":SL=12288
:REM*197
60 FORW=1 TO LEN(W$):PRINT"{SHIFT CLR}"MID$(W
$,W,1):X=PEEK(1024)AND255:X=X*8
:REM*43
70 FOR T=7 TO 0 STEP -1:Z=(2{UP ARROW}T):FORQ=1
TO H:FORJ=7 TO 0 STEP -1
:REM*250
80 IF(PEEK(SL+X+J)ANDZ)=Z THENO=0:FORN=1 TO H
:PRINT#4,"{CTRL 9}{CTRL 0}";NEXTN:GOT
O100
:REM*84
90 FORN=1 TO H:PRINT#4," ";NEXTN
:REM*158
100 NEXTJ:PRINT#4,CHR$(141):NEXTQ,T:PRINT#
4,CHR$(141):NEXTW
:REM*175
110 INPUT"ANOTHER BANNER";A$:IFLEFT$(A$,1)
="Y" THENGOTO50
:REM*247
120 CLOSE4:END
:REM*42
```

—JAY TAPLIN, HAMPDEN, ME ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN

THE **COMMODORE** 64 / 128 USER'S GUIDE

August/September 1990
An IDG
Communications
Publication

FREE
PROGRAMMER'S CARD
INSIDE!

SOLVING THE MONITOR MYSTERY

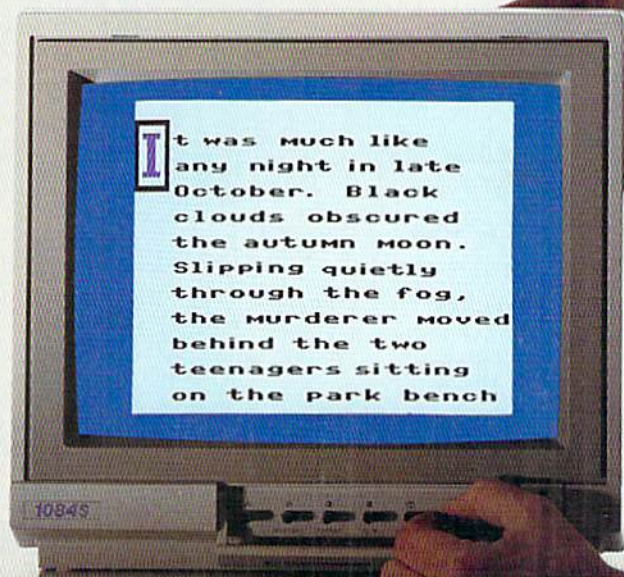
■ Which One for You?

A NEW HARD DRIVE FOR YOUR COMMODORE

Plus:

- From Moscow to Milwaukee on Your 128
- C-64 Mighty Mouse Driver
- GEOS Software Roundup
- C-128 Horseshoes

- Tips for Better Productivity



New
Column!



U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

MAGIC

Animate your 40-column screens; keep track of free disk blocks; and discover ROM chip secrets.

By TIM WALSH

\$59C 64/128 BORDER ANIMATOR

Animate your C-64 and C-128 40-column screens with 64/128 Border Animator. It puts animated lights on the screen like those you see on TV game shows and in store windows. To use it in your own programs, replace lines 60-70 with your own text message. The default colors can be customized by changing the values of the last three Pokes in line 80 to your own colors by entering values from 0 to 15.

```
Ø REM 64/128 BORDER ANIMATOR - RICHARD PENN
N                                     :REM*71
1Ø POKE5328Ø,Ø:POKE53281,Ø:POKE53265,11
                                     :REM*2Ø9
2Ø FORU=679TO714:READQ:POKEU,Q:CK=CK+Q:NEXT
T                                     :REM*49
3Ø IFCK<>4894THENPRINT"ERROR IN DATA":END
                                     :REM*3Ø
4Ø DATA169,Ø,141,14,22Ø,173,18,2Ø8,2Ø1,25Ø
,2Ø8,249,174,36,2Ø8,173,35,2Ø8 :REM*197
5Ø DATA141,36,2Ø8,173,34,2Ø8,141,35,2Ø8,14
2,34,2Ø8,169,1,141,14,22Ø,96 :REM*12Ø
6Ø PRINT"{SHFT CLR}{8 CRSR DNs}{CTRL 8}"TAB
B(11)"ILLUMINATED BORDERS" :REM*22Ø
7Ø PRINTTAB(19)"{2 CRSR DNs}BY":PRINTTAB(1
4)"{2 CRSR DNs}RICHARD PENN" :REM*2
8Ø POKE53282,2:POKE53283,1:POKE53284,6
                                     :REM*215
9Ø PRINT"{HOME}":PRINT"{2 SPACES}";:FORT=1
TO12:PRINT"{CTRL Ø}{SHFT SPACE}{CTRL 9}
{SHFT SPACE}";:NEXT :REM*85
1ØØ FORT=1TO7:PRINT"{CTRL Ø}{SHFT SPACE}{C
RSR DN}{CRSR LF}{CTRL 9}{CRSR DN}{CRS
R LF}{SHFT SPACE}{CRSR DN}{CRSR LF}";:
NEXT :REM*86
11Ø FORT=1TO12:PRINT"{CTRL Ø}{SHFT SPACE}{
2 CRSR LFs}{CTRL 9}{2 CRSR LFs}{SHFT
SPACE}{2 CRSR LFs}";:NEXT :REM*96
12Ø FORT=1TO7:PRINT"{CTRL Ø}{SHFT SPACE}{C
RSR UP}{CRSR LF}{CTRL 9}{CRSR UP}{CRS
R LF}{SHFT SPACE}{CRSR UP}{CRSR LF}";:
NEXT:POKE53265,91 :REM*112
13Ø SYS679:GETA$:IFA$THENPRINT"{SHFT CLR}"
:POKE53265,27:GOTO15Ø :REM*159
14Ø FORDL=1TO54:NEXT:GOTO13Ø :REM*1Ø1
15Ø REM PLACE YOUR PROGRAM HERE :REM*95
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$59D 1541/1571 FREE BLOCK READER

If you write Basic programs that access files on disk, you

can use my C-64 and C-128 routine, 1541/1571 Free Block Reader, which keeps track of the number of free disk blocks on both the 1541 and 1571.

When run, the program reads information from the disk, then displays a message stating the number of blocks free. If you want to use 1541/1571 Free Block Reader in your own programs, simply add a Return statement at the end of my subroutine.

```
Ø REM 1541/1571 FREE BLOCK READER - FRANK
J. LIVERS :REM*182
1Ø OPEN15,8,15,"IØ:" :REM*158
2Ø PRINT#15,"M-R"CHR$(25Ø)CHR$(2) :REM*52
3Ø GET#15,A$:IF A$=" " THEN A$=CHR$(Ø)
:REM*21Ø
4Ø PRINT#15,"M-R"CHR$(252)CHR$(2) :REM*4
5Ø GET#15,F$:IF F$=" " THEN F$=CHR$(Ø)
:REM*1Ø2
6Ø X=ASC(A$):F=ASC(F$):BF=X+F*256:PRINT"BL
OCKS FREE = ";BF:CLOSE15:END :REM*199
```

—FRANK J. LIVERS, MASON CITY, IA

\$59E COLOR ROLLER 64

Color Roller 64 differs from other machine language color-cycling programs in that three different colors "roll" down any text printed on the screen. After typing in my program below and running it, begin by entering SYS 49152,C1,C2,C3,SP.

Variable C1 is the first color, C2 is the second, and C3 the third, with the value of each variable ranging from 0 to 15. SP is the rolling speed, where 1 is the fastest and 255 the slowest. Simply mix the colors and add speed to get any one of a variety of effects desired. You can end the rolling action with SYS 49358.

```
Ø REM COLOR ROLLER 64 - JERRY DICKSON :REM*61
1Ø FORT= 49152 TO 49374:READD:POKE T,D:CK=
CK+D:NEXT :REM*71
2Ø IF CK <> 27434 THEN PRINT"ERROR IN DATA
..." :REM*249
3Ø SYS 49152,1,2,3,6 :REM*1Ø4
4Ø PRINTCHR$(147)"SYS 49152,C1,C2,C3,S1 TO
ACTIVATE." :REM*17
5Ø DATA 32,155,183,142,6Ø,3,32,155,183,142
,61,3,32,155,183,142,62,3,32 :REM*56
6Ø DATA 155,183,134,251,12Ø,162,36,142,2Ø,
3,162,192,142,21,3,88,96,32,181:REM*245
7Ø DATA 192,174,66,3,224,1,2Ø8,3,76,49,234
,173,6Ø,3,16Ø,Ø,153,Ø,216,153 :REM*255
8Ø DATA 12Ø,216,153,24Ø,216,153,1Ø4,217,15 ▶
```


MAGIC

```

3,224,217,153,88,218,153,208 :REM*150
90 DATA 218,153,72,219,153,192,219,200,192
,40,208,224,173,61,3,160,0,153 :REM*240
100 DATA 40,216,153,160,216,153,24,217,153
,144,217,153,8,218,153,128,218:REM*194
110 DATA 153,248,218,153,112,219,200,192,4
0,208,227,173,62,3,160,0,153 :REM*179
120 DATA 80,216,153,200,216,153,64,217,153
,184,217,153,48,218,153,168 :REM*194
130 DATA 218,153,32,219,153,152,219,200,19
2,40,208,227,173,62,3,141,63,3:REM*155
140 DATA 173,61,3,141,62,3,173,60,3,141,61
,3,173,63,3,141,60,3,76,49,234 :REM*16
150 DATA 238,65,3,173,65,3,197,251,208,9,1
69,0,141,65,3,141,66,3,96,169 :REM*110
160 DATA 1,141,66,3,96,120,162,219,142,20
,3,162,192,142,21,3,88,96,76,49:REM*109
170 DATA 234,0 :REM*242
  
```

—JERRY DICKSON, SANDWICH, IL

\$59F 1581 SECRET MESSAGES

Did you know that there are secret messages buried deep within the Commodore 1581 disk drive's ROM chips? If you're curious and want to discover who designed the 3 1/2-

inch drive's hardware and software and who it is dedicated to, enter my program, 1581 Secret Messages, and run it to reveal the secrets. Be certain to set U to the drive number (usually 8 or 9) of the 1581.

```

0 REM 1581 SECRET MESSAGES - JOEL M. RUBIN
:REM*172
10 U=9: REM SET U TO UNIT NUMBER OF THE 15
81 :REM*152
20 OPEN 1,U,15,"B-?" :REM*55
30 GET#1,A$:PRINT A$;:IF ST=0 GOTO 30
:REM*246
40 PRINT#1,"B-?" :REM*186
50 GET#1,A$:PRINTA$;:IF ST=0 GOTO 50
:REM*172
  
```

—JOEL M. RUBIN, SAN FRANCISCO, CA ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

ATTENTION COMMODORE OWNERS !!!



COMMODORE AMIGA USERS FAIR

Sat. & Sun. September 15 & 16, 1990
Valley Forge Convention Center, Valley Forge, PA

Support those who support you! 8 bit United Support Alliance is a group of leading 8 bit developers who are dedicated to the survival of the C-64 and C-128 computer. Help us to continue our support by attending this year's World of Commodore show in Valley Forge, PA, on September 15 & 16, 1990. Vendors will be releasing many new hardware and software products. There will be seminars, demonstrations and giveaways for those attending.

Stand up and be counted! Help us to help you by showing your support.

This ad is sponsored by the following companies



• **BRIWALL** • **Parsec**

SoftDisk Publishing • geoWorld • PICFEST SIDFEST • Utilities Unlimited

Brown Boxes • Dr. Evil Labs • Twin Cities 128 • The Soft Group

Berkeley Softworks • Q - Link • RUN

To purchase \$6.00 advance tickets, simply send a money order with the appropriate amount to cover the tickets along with a self addressed stamped envelope. Bulk orders add additional postage. User Groups are welcome. Mail requests to:

8 bit U.S.A.

8 bit United Support Alliance
P.O. Box 111, Dept. 8, Salem, MA 01970-0111

Commodore
MAGAZINE

RUN

THE **COMMODORE** 64 / 128 USER'S GUIDE

October 1990
An IDG
Communications
Publication

How To Use...
WORD PROCESSORS

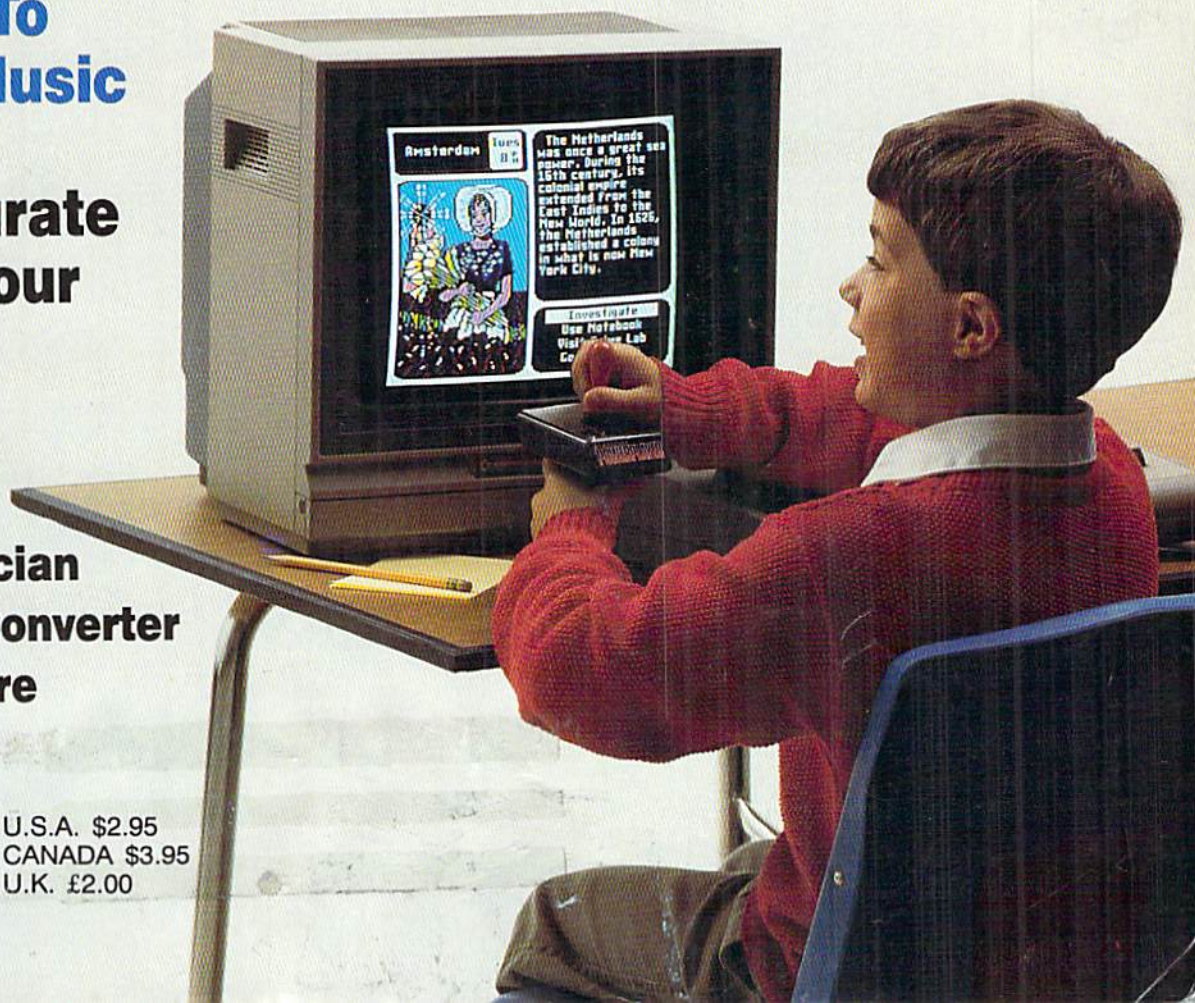
THE BEST Software For Your Kids

**Easy Way To
Make 64 Music**

**Keep Accurate
Time On Your
C-64/128**

Plus:

- ▶ **Sprite Magician**
- ▶ **RUN Paint Converter**
- ▶ **CES Software Showcase**



U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

MAGIC

Disk drive light show, joystick direction, and tabbing for both the 64 and 128.

By TIM WALSH

\$5A0 DRIVE LIGHTER 64/128

If you want to program the activity light on your Commodore disk drive, it's an easy process, regardless of whether you use a 1541, 1571 or 1581. My demo program, Drive Light Controller, shows how to program the drive light to go off and on by pressing the space bar in either 64 or 128 mode. Use it as a subroutine in your own programs or by itself as a stand-alone program.

```
0 REM DRIVE LIGHT CONTROLLER - RICHARD PENN
1 PRINTCHR$(147)"DISK DRIVE ERROR LIGHT D
  EMO"
2 PRINT"PRESS SPACEBAR & WATCH THE DRIVE
  LIGHT"
3 C$="{HOME}{2 CRSR DNs}DRIVE LIGHT IS":F
  $=" ON ":G$=" OFF"
4 GETA$:IFA$=""THEN 40
5 OPEN8,8,8,"#"
6 PRINTC$;F$
7 GETB$: IF B$<>" " THEN 70
8 CLOSE 8:PRINT C$;G$:GOTO 40
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$5A1 JOYSTICK PORT COMPARISON

Commodore 64 programmers usually avoid using joystick port 1 because of conflicts with keypresses. While this is an important consideration, I found another, more significant, reason to limit joystick port 1 to use with a mouse—it slows down program speed.

When a key is pressed, a routine in the C-64's ROM decodes the keypress. Since joystick activity in port 1 is interpreted as keypresses, program execution times are affected. The short demo program I wrote, Joystick Port Comparison 64, clearly shows the difference. Run it in 64 mode, and you're certain to be surprised at the results!

```
0 REM FASTER JOYSTICK PORT DEMO - RICHARD
  PENN
1 PRINTCHR$(147)CHR$(5);:WAIT 197,64:GOSUB
  80:PRINT"NORMAL SPEED":PRINT:PRINT
2 PRINTCHR$(159)"PRESS & HOLD FIREBUTTON
  ON JOYSTICK IN{2 SPACES}PORT 2":REM*98
3 WAIT 56320,16,16:GOSUB80:PRINT"WITH FIR
  EBUTTON ON IN{2 SPACES}PORT 2":PRINT:PR
  INT:B=X
4 PRINTCHR$(155)"PRESS & HOLD FIREBUTTON
```

```
ON JOYSTICK IN{2 SPACES}PORT 1":REM*56
50 WAIT 56321,16,16:GOSUB80:PRINT"WITH FIR
  EBUTTON ON IN{2 SPACES}PORT 1":C=X:PRIN
  T
60 PRINTCHR$(158)"FIREBUTTON IN PORT 1 MAD
  E EXECUTION"
70 PRINTC-B"JIFFIES OR":PRINTINT(C/B*100-1
  00)"PERCENT SLOWER":END
80 PRINT"PLEASE WAIT, RUNNING BENCHMARK...
  ":A=0
90 TI$="00000000":FORT=1TO1000:A=A+1:NEXT:X=
  TI:PRINT "TOOK"X"JIFFIES ";:RETURN
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA

\$5A2 EITHER JOYSTICK 64/128

Newcomers to the art of programming the joystick ports on their Commodore 64 or 128 will appreciate Either Joystick 64/128. This short routine, which works in both 64 and 128 modes, shows the direction the joystick in either port is being pressed. It also shows when the firebutton is pressed.

```
0 REM EITHER JOYSTICK PORT 64/128 - WARD S
  HRAKE
10 JY=(PEEK(56320)ANDPEEK(56321))AND31
20 IF JY=30 THEN PRINT "UP"
30 IF JY=29 THEN PRINT "DOWN"
40 IF JY=27 THEN PRINT "LEFT"
50 IF JY=23 THEN PRINT "RIGHT"
60 IF JY=15 THEN PRINT "FIREBUTTON"
70 GOTO10
```

—WARD SHRAKE, COVINA, CA

\$5A3 C-128 TABBING TRICK

Indentation for For-Next and Do loops in your Basic 7.0 programs makes for easily deciphered Basic listings. Unfortunately, the C-128's tab key doesn't have an effect in Basic. This problem can be overcome by entering the following in Direct mode:

KEY 1, CHR\$(160)+CHR\$(9)

Now, by pressing the F1 key, you can tab across the screen in Basic, and the tabs will be recorded by the Basic editor. Using this process, when you enter a line number and press the F1 key, you'll create a line number that consists of just

Exclusive Offer From RUN Magazine!

SUPER SNAPSHOT 4 UTILITY CARTRIDGE

Attention Programmers and Users! Get the perfect cartridge for your 64 or 128 system—for only \$19.95. That's a savings of \$15.00 off the manufacturer's retail price.

With the simple press of a button, Super Snapshot 4 enhances your C-64 or C-128 with this incredible assortment of special features:

- Turbo load & save
- Screen dump
- DOS wedge
- Pre-programmed function keys
- Machine language monitor
- Sprite editor and monitor
- File manager
- Fast formatter
- Fast disk copier
- One-key program loads
- Reset switch
- Supports all disk drive formats
- All for just \$19.95!



HURRY! ORDER NOW
— quantities are limited.

Call 1-800-343-0728 or mail this coupon today!

YES! Send me the Super Snapshot 4 Utility Cartridge, Operating Manual and System Disk for only \$19.95, plus \$4 postage and handling. I save \$15.00 off the retail price.

☐ Enclosed is my check/money order

☐ Charge my account below:

☐ MasterCard

☐ Discover

☐ VISA

☐ American Express

Account# _____ Exp. _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____ SS1090

Please allow 4-6 weeks for delivery. Outside North America, surface shipping/handling is \$6.00. Payment in U.S. funds drawn on U.S. bank, or by VISA, MasterCard, American Express or Discover. All cartridges have a 30-day replacement guarantee.

SUPER SNAPSHOT

MAGIC

that line number, which gives your structured programs a unique appearance.

—SCOTT G. AUGER, LAURIM, MI

\$5A4 64 TAB KEY

The C-64, unlike the C-128, lacks a tab key. My program, 64 Function Key Enhancer, adds a tab key to the 64. After running the program, pressing control/F1 tabs seven spaces across the screen. It's not a true tab key, because it erases characters as it moves across the screen, so use it cautiously.

The program also adds the Delete function, which is used by pressing the control/F3 combination. This delete key erases everything beneath the cursor and "sucks in" characters on the same line from right to left. You'll find this utility to be a useful addition to your bag of programming tricks.

Ø REM FUNCTION KEY ENHANCER - BARRY SMITH
:REM*216

1Ø FOR T = 49152 TO 49252:READ A:C=C+A:POK
E T,A:NEXT :REM*44

2Ø IF C <> 1Ø621 THEN PRINT"ERROR IN DATA."
:END :REM*5Ø

3Ø PRINT"{SHFT CLR}ENHANCED FUNCTION KEYS
ACTIVE!" :REM*2Ø4

4Ø PRINT"CTRL/F1 FOR TAB KEY" :REM*96

5Ø PRINT"CTRL/F3 FOR DELETE KEY":SYS49152
:REM*12

6Ø DATA 173,2Ø,3,141,6Ø,3,173,21,3,141,61,
3,12Ø,169,25,141,2Ø,3,169,192 :REM*137

7Ø DATA 141,21,3,88,96,165,198,2Ø1,Ø,2Ø8,4
5,173,62,3,2Ø1,4,24Ø,38,2Ø1,5 :REM*223

8Ø DATA 24Ø,34,173,141,2,2Ø1,4,2Ø8,27,165,
197,2Ø1,4,24Ø,7,2Ø1,5,24Ø,25 :REM*17

9Ø DATA 76,76,192,162,Ø,169,32,157,119,2,2
32,224,5,48,246,134,198,165 :REM*232

1ØØ DATA 197,141,62,3,1Ø8,6Ø,3,169,32,141,
119,2,169,2Ø,141,12Ø,2,169,2 :REM*11Ø

11Ø DATA 133,198,76,76,192 :REM*239

—BARRY E. SMITH, VINTON, VA

\$5A5 ATTENTION, C-128/128D USERS!

When you're using a word processor such as RUN Script and want to type in capital letters, it's better to use the caps-lock key, rather than the shift-lock key. Why? Because the caps-lock key only affects the lettered keys. The number keys, cursor movement, and other frequently used keys, such as the insert-delete key and the return key, will function in the regular manner.

—RUN EDITORS ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published. For a copy of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope.

Commodore
MAGAZINE

RUN

THE **COMMODORE** 64/128 USER'S GUIDE

November 1990
An IDG
Communications
Publication

FREE
SOFTWARE
You Can Own (see p. 29)

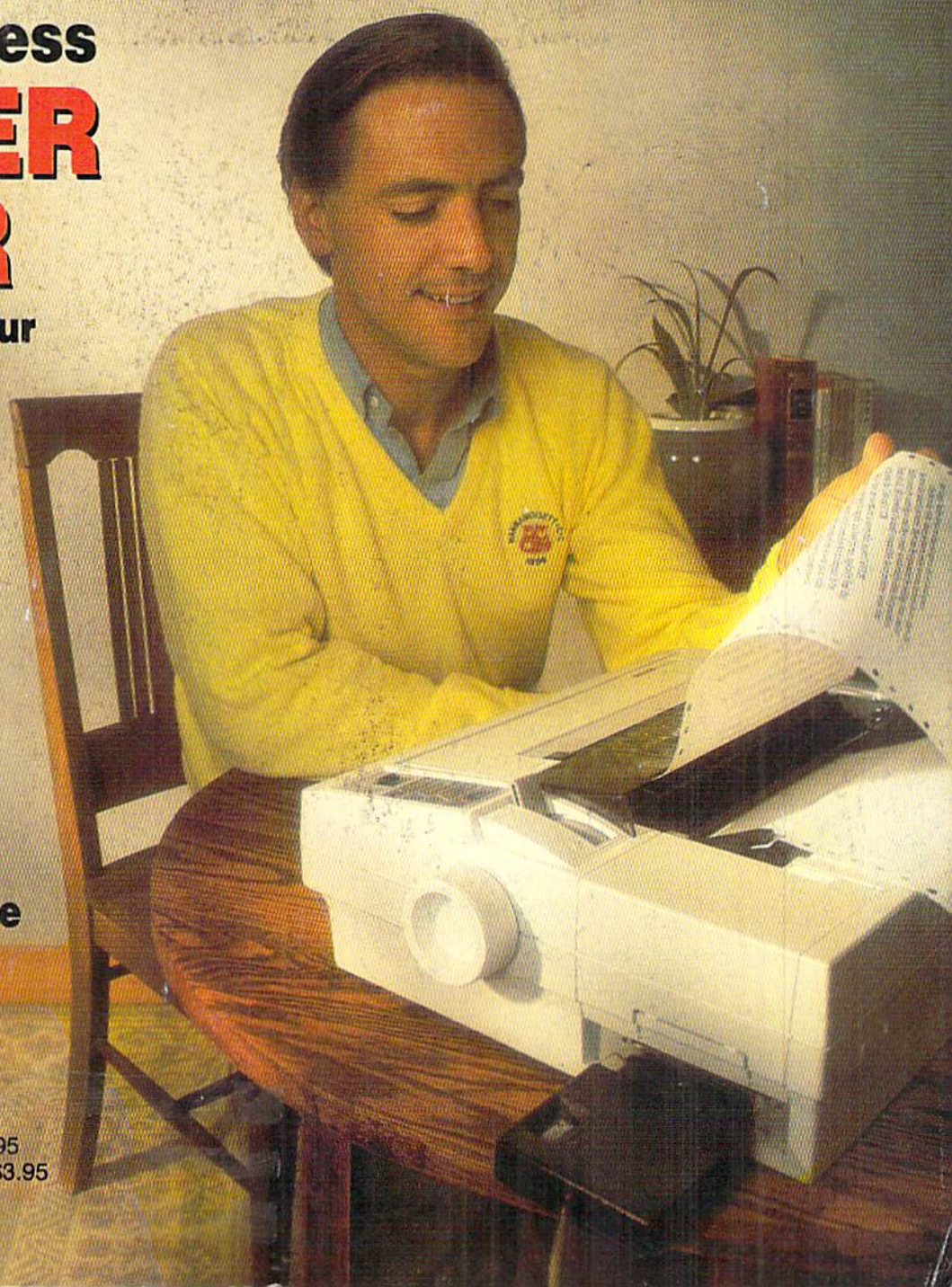
How to Harness **PRINTER POWER**

- 10 Solutions to Your Problems
- Jazz Up Your Printouts
- Which Is Better: 9- Vs. 24-Pin?

PLAQUE ATTACK!
C-64 Arcade Action

Plus:

- Macro Mania
- Machine Language Magic
- geoStripper



U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

MAGIC

*Clear your C-64 screen, reverse a New command,
and find the value of any memory location.*

By TIM WALSH

\$5A6 GATE CLEAR 64

Clearing your C-64's screen needn't be dull. Add some excitement with Gate Clear 64. After you've typed in and saved the listing, run it, and it will demonstrate how Gate Clear 64 clears the screen from side to side.

Best of all, Gate Clear 64 is completely relocatable to any memory location not already occupied by other programs.

```
Ø REM GATE CLEAR 64 - JEFFREY PANICI
:REM*169
1Ø PRINTCHR$(147):FORT=1 TO 1ØØØ:PRINT".";
: NEXT :REM*249
2Ø FORI=49152TO49274:READZ:POKEI,Z:CK=CK+Z
: NEXT :REM*7Ø
3Ø IF CK<>13883 THEN PRINT"ERROR IN DATA..
: ".END :REM*61
4Ø SYS 49152 :REM*214
5Ø DATA 162,Ø,16Ø,41,169,64,133,251,169,32
,157,Ø,4,153,4Ø,4,157,8Ø,4 :REM*222
6Ø DATA 153,12Ø,4,157,16Ø,4,153,2ØØ,4,157,
24Ø,4,153,24,5,157,64,5,153 :REM*211
7Ø DATA 1Ø4,5,157,144,5,153,184,5,157,224,
5,153,8,6,157,48,6,153,88,6 :REM*168
8Ø DATA 157,128,6,153,168,6,157,2Ø8,6,153,
248,6,157,32,7,153,72,7,157 :REM*45
9Ø DATA 112,7,153,152,7,157,192,7,232,136,
32,179,238,32,179,238,32,179 :REM*43
1ØØ DATA 238,32,179,238,32,179,238,32,179,
238,32,179,238,32,179,238,32 :REM*116
11Ø DATA 179,238,32,179,238,192,Ø,2Ø8,143,
96,153 :REM*32
```

—JEFFREY PANICI, SANDWICH, IL

\$5A7 LETTER/NUMBER GUESS 64/128

This program lets you guess either a letter or a number within a range. When you run the program, it gives you ten chances to guess a letter from A to Z or a number from 1 to 100. The computer will tell you whether to guess higher or lower after each guess. Not challenging enough? Change the value of the variables X (the number of guesses) and N (the highest number) in line 20. The program automatically adjusts itself when you change the high number range.

```
Ø REM LETTER OR NUMBER GUESS 64/128 - CALV
IN PRESLEY :REM*131
1Ø INPUT"{SHFT CLR}PLAY NUMBER OR LETTER (
N/L)";Q$ :REM*121
2Ø X=1Ø:N=1ØØ:T=1:IF Q$=""THEN 1Ø :REM*125
3Ø IF Q$="L"THEN N$="LETTER":M$="A-Z":N=26
:W=65 :REM*2Ø6
```

```
4Ø IF Q$<>"L"THEN:N$="NUMBER":M$="1 -"+STR
$(N):W=1 :REM*93
5Ø PRINT"{SHFT CLR}{2 CRSR DNS}{2 CRSR RTS
}I'M THINKING OF A "N$" FROM " :REM*124
6Ø PRINT"{2 SPACES}"M$". YOU SHOULD GUESS
IT":PRINT"{2 SPACES}IN"X"TRIES OR LESS"
:REM*38
7Ø L=INT(RND(Ø)*N+W):PRINT:PRINT :REM*99
8Ø AN$=STR$(L):IFW=65THENAN$=" "+CHR$(L)
:REM*14
9Ø PRINT"{CRSR DN}{COMD 7}";T;:INPUT"WHAT
IS YOUR GUESS";A$:IFA$=""THEN9Ø :REM*96
1ØØ IFW=65THENG=ASC(A$):IFG<65ORG>9ØTHEN9Ø
:REM*142
11Ø IFW=1THENG=VAL(A$):IFG>NORG<1THEN9Ø
:REM*6
12Ø IF G=L THEN 18Ø :REM*68
13Ø IF G>L THENPRINTTAB(3Ø)"{CTRL 2}LOWER"
:REM*29
14Ø IF G<L THENPRINTTAB(3Ø)"{CTRL 2}HIGHER
" :REM*2Ø5
15Ø IF T>=X THEN 17Ø :REM*2Ø
16Ø T=T+1:GOTO 9Ø :REM*139
17Ø PRINT"{CRSR DN}THE ANSWER IS"AN$:GOTO1
9Ø :REM*224
18Ø PRINTTAB(3Ø)"RIGHT!!!":PRINT"YOU GUESS
ED IT IN"X"TRIES" :REM*32
19Ø PRINTTAB(12)"PLAY AGAIN (Y/N)?"
:REM*218
2ØØ GET P$:IF P$=""THEN 2ØØ :REM*132
21Ø IF P$="N"THEN END :REM*71
22Ø IF P$<>"Y"THEN 2ØØ :REM*59
23Ø RUN :REM*113
```

—CALVIN PRESLEY, BRIGHTON, MO

\$5A8 FAST UN-NEW FOR C-64

At one time or another, every computer user has unintentionally entered the New command. This means having to reload a program—or worse, losing a program not previously saved. Unfortunately, most un-new utilities and techniques for recovering your lost program assume you've loaded one before working on a program.

Since most computer users don't bother loading an un-new utility before any other program, I wrote Auto-Un-New 64. Type in and save this program, then insert a formatted work disk and run Auto-Un-New 64. A file will be created with the name Unnew.

The next time you accidentally enter NEW, just place the work disk in the drive and type LOAD "UNNEW",8,1. The

Continued on p. 51.

MAGIC

From p. 6.

Basic program that was erased by the New command will be restored automatically. There's no need to remember any Pokes or other commands, and you don't have to load this handy utility before it's needed.

```

0 REM UNNEW 64 - D.J. LAURIA :REM*185
10 PRINT "{SHFT CLR}{CURSR DN}THIS PROGRAM C
   REATES A FILE NAMED UNNEW ON DISK."
   :REM*213
20 PRINT "{CURSR DN}PRESS ANY KEY TO BEGIN:
   " :REM*236
30 POKE198,0:WAIT198,15:POKE198,0 :REM*11
40 FORI=1TO74:READA:N=N+A:NEXT :REM*209
50 IFN<>6932THENPRINT"ERROR IN DATA STATEM
   ENTS.":END :REM*38
60 OPEN15,8,15,"I0":OPEN8,8,8,"0:UNNEW,P,W
   ":INPUT#15,E,E$ :REM*80
70 IFETHENPRINT "{CURSR DN}DISK ERROR> {CTRL
   9}";E;E$:CLOSE8:CLOSE15:END :REM*202
80 RESTORE:FORI=1TO74:READA:PRINT#8,CHR$(A
   );:NEXT:CLOSE8:CLOSE15:END :REM*19
90 DATA 188,2,76,211,2,13,80,82,79,71,82,6
   5,77,32,82,69,83,84,79,82,69 :REM*204
100 DATA 68,46,13,13,169,1,141,2,8,32,51,1
   65,165,34,133,45,165,35,133,46 :REM*72
110 DATA 169,131,141,2,3,169,164,141,3,3,1
   62,0,189,191,2,32,210,255,232 :REM*42
120 DATA 224,20,208,245,32,96,166,108,2,3,
   139,227,188,2 :REM*127

```

—D. J. LAURIA, BARRINGTON, RI

\$5A9 MORE "NEW" RELIEF

A nice compliment to the above program is my Are You Sure? 64 program. Like the C-128, which gives you the "Are you sure?" prompt when you issue certain disk commands, this does the same when the New command is given in 64 mode.

To use it, just type in the listing, save it to disk, and then run it. Afterwards, whenever you type NEW, the "Are you sure?" prompt will appear. Pressing any key other than Y will preserve your file in memory. It's a great safeguard for anyone who programs in Basic on the C-64.

```

0 REM ARE YOU SURE PROMPT 64 - PAUL FRAZIE
   R :REM*195
10 FORJ=53093 TO 53245:READ A:POKE J,A:NEX
   T:SYS 53093 :REM*186
20 PRINTCHR$(147) "'ARE YOU SURE ?' PROMPT
   IS ACTIVE." :REM*211
30 DATA 173,4,3,141,254,207,173,5,3,141,25
   5,207,169,124,141,4,3,169,207 :REM*16
40 DATA 141,5,3,96,173,0,2,201,78,240,3,10
   8,254,207,173,1,2,201,69,208 :REM*195
50 DATA 246,173,2,2,201,87,208,239,169,13,
   32,210,255,169,65,32,210,255 :REM*96
60 DATA 169,82,32,210,255,169,69,32,210,25
   5,169,32,32,210,255,169,89,32 :REM*85
70 DATA 210,255,169,79,32,210,255,169,85,3
   2,210,255,169,32,32,210,255 :REM*215
80 DATA 169,83,32,210,255,169,85,32,210,25
   5,169,82,32,210,255,169,69,32 :REM*151
90 DATA 210,255,169,63,32,210,255,169,0,13

```

```

3,198,32,228,255,201,0,240 :REM*228
100 DATA 249,24,201,89,208,3,108,254,207,2
   4,169,32,162,0,157,0,2,232,224:REM*110
110 DATA 81,208,248,24,108,254,207:REM*177

```

—PAUL W. FRAZIER, LEBANON, PA

\$5AA No Overflow 64/128

Anyone who has tried to perform mathematical calculations on his or her Commodore knows the limitations of the 64/128. The largest number for which a factorial can be calculated is only 33, whereas a scientific calculator can compute 69.

No Overflow 64/128 alleviates that problem with a simple base-ten logarithm. My program lets your 64 or 128 calculate a factorial from any number up to 5109! Be forewarned, however, that the larger your number, the longer the calculations take.

```

0 REM NO OVERFLOW 64/128 - DENNIS CULLEY
   :REM*77
10 INPUT "FIND FACTORIAL OF";N:F=1:P=0:C=1
   :REM*36
20 IFC+11<N THEN FOR X=C TO C+9:F=F*X:NEXT
   :C=C+10:GOSUB 50:GOTO20 :REM*89
30 FOR X=C TO N:F=F*X:NEXT:GOSUB50:REM*212
40 PRINTN;"FACTORIAL = ";F;"E";P:GOTO10
   :REM*214
50 L=INT(LOG(F)/LOG(10)):P=P+L:F=F/10{UP A
   RROW}L:PRINTL: RETURN :REM*186

```

—DENNIS ALLEN CULLEY, WEST CHICAGO, IL

\$5AB MEMORY DISPLAY 64

Programmers, listen up! Tired of exiting your programs and typing PEEK (X) to find the value of a memory location? With Memory Display 64, the contents of any memory location are displayed in binary numerals in the upper-left corner of the screen.

After running Memory Display 64, which is relocatable in memory, you can enter a memory location for, say, joystick input, and watch the results as you move the joystick. While the number is displayed in white, you can change the color by entering POKE 828,X, where X is a number from 0 to 15.

```

0 REM MEMORY DISPLAY 64 - STEPEHEN DIRSCHA
   UER :REM*163
10 FOR T=828 TO 897:READ A:POKE T,A:NEXT
   :REM*106
20 INPUT "ENTER LOCATION";LC:HI=LC/256
   :REM*25
30 LO=LC-256*HI:POKE 861,LO:POKE 862,HI
   :REM*250
40 SYS 828 :REM*174
50 DATA 120,174,20,3,172,21,3,142,130,3,14
   0,131,3,162,85,160,3,142,20,3 :REM*0
60 DATA 140,21,3,88,96,169,128,141,132,3,1
   60,0,173,133,3,45,132,3,205 :REM*24
70 DATA 132,3,240,5,169,48,76,110,3,169,49
   ,153,0,4,169,1,153,0,216,200 :REM*190
80 DATA 192,8,240,6,110,132,3,76,92,3,76
   :REM*110

```

—STEPHEN DIRSCHAUER, TORONTO, ONTARIO, CANADA ■

RUN

December 1990

An IDG
Communications
Publication

THE **COMMODORE** 64 / 128 USER'S GUIDE

HOW TO MAKE \$\$\$ With Your Commodore

**Can You Get
A Loan?
Your 64/128
Can Tell You!**

Power of C-64 Press

Draw a C-128 Map

Plus:

- ▶ **GridRunner Arcade Game**
- ▶ **Super 64 Editor**
- ▶ **Hand Scanner Reviewed**

U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00



MAGIC

Quickly find information concerning memory locations and RAM, and create a shutter effect on your screen.

By TIM WALSH

\$5AC TEXT INTO GRAPHICS 64

With my program, Text Into Graphics 64, and the SYS 49152 command, you can instantly copy an entire text screen to a graphics screen.

The program reads each character on the text screen and its specific character data, and copies it to the graphics screen at memory locations 8192 to 16192. I've also included a demo routine to show the characters before and after they're copied.

```
Ø REM COPY TEXT TO GRAPHICS 64 - JAY TAPLIN
N                                     :REM*58
1Ø FORJ=49152TO49278:READA:POKEJ,A:NEXT:A$
=CHR$(13):B$=CHR$(147)             :REM*237
2Ø DATA 169,24,141,24,2Ø8,169,59,141,17,2Ø
8,173,14,22Ø,41,254,141,14,22Ø :REM*148
3Ø DATA 165,1,41,251,133,1,169,Ø,133,251,1
33,253,169,4,133,252,169,32,133:REM*136
4Ø DATA 254,16Ø,Ø,169,Ø,133,76,177,251,133
,75,24,6,75,38,76,6,75,38,76,6 :REM*42
5Ø DATA 75,38,76,165,76,1Ø5,2Ø8,133,76,177
,75,145,253,2ØØ,192,8,2Ø8,247 :REM*141
6Ø DATA 24,165,253,1Ø5,8,133,253,165,254,1
Ø5,Ø,133,254,24,165,251,1Ø5,1 :REM*38
7Ø DATA 133,251,165,252,1Ø5,Ø,133,252,2Ø1,
7,2Ø8,188,165,251,2Ø1,232,2Ø8 :REM*218
8Ø DATA 182,165,1,9,4,133,1,173,14,22Ø,9,1
,141,14,22Ø,96 :REM*78
1ØØ PRINTB$"CREATE TEXT FOR THE GRAPHICS S
CREEN ON{2 SPACES}THE TEXT SCREEN ";
                                     :REM*254
11Ø PRINT"AND WITH SYS 49152, IT{2 SPACES}
IS COPIED TO THE GRAPHICS SCREEN."
                                     :REM*61
12Ø PRINTA$A$A$A$ :REM*14Ø
13Ø PRINTCHR$(145)" PRESS A KEY TO COPY SC
REEN":IFPEEK(197)=64THEN13Ø :REM*11
14Ø SYS49152:PRINTB$;:FORJ=1TO12 :REM*14Ø
15Ø PRINT"PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP
PPPPPPPP";:NEXT :REM*87
```

—JAY TAPLIN, HAMPDEN, ME

\$5AD PAUSE BUTTON 64

Pause Button 64 is designed to pause the execution of any program at the press of a key—plus pause the output of a listing to a screen or printer!

After typing in Pause Button 64 and saving it to disk, run it to activate it. To pause any operation, press the F1 key. Pressing F1 again resumes the operation. The program is

relocatable to any area in memory not occupied by another program.

```
Ø REM REM PAUSE BUTTON 64 - DOUG MCMARTIN
                                     :REM*84
1Ø FOR I= Ø TO 57:READ A:CK=CK+A:POKE 679+
I,A:NEXT :REM*232
2Ø IF CK <> 6323 THEN PRINT"ERROR IN DATA.
..":END :REM*175
3Ø PRINTCHR$(147)"PRESS F1 TO PAUSE & RESU
ME.":SYS 712 :REM*81
4Ø DATA 32,228,255,2Ø1,133,2Ø8,7,32,228,25
5,2Ø1,133,2Ø8,249,1Ø8,16Ø,3 :REM*95
5Ø DATA 234,12Ø,173,16Ø,3,141,2Ø,3,173,161
,3,141,21,3,88,96,173,2Ø,3 :REM*48
6Ø DATA 141,16Ø,3,173,21,3,141,161,3,12Ø,1
69,167,141,2Ø,3,169,2,141,21 :REM*142
7Ø DATA 3,88,96 :REM*245
```

—DOUG MCMARTIN, GREEN VILLAGE, NJ

\$5AE ZPAGER 64

When using the FRE function (PRINT FRE(0)) to see how much free RAM is remaining on the C-64, you see a negative number. To alleviate this problem, I wrote ZPager 64. Not only does it operate concurrently with most Basic programs, it also does a lot more than just report the actual amount of free RAM.

ZPager works in both Direct and Program modes. After activating ZPager 64, entering SYS 820 gives you the following information concerning memory locations and RAM:

TXTTAB—Start of Basic text memory
VARTAB—Beginning of Basic variables
ARYTAB—Beginning of arrays
STREND—The end of arrays+1
FRETOP—Bottom of string memory
FRESPC—Utility string pointer
MEMSIZ—Highest Basic address
FREE—Amount of unused RAM remaining

```
Ø REM ZPAGER 64 - MICHAEL MYERS :REM*118
1Ø FOR T=82Ø TO 98Ø:READ D:POKE T,D:CK=CK+
D:NEXT :REM*13
2Ø IF CK <> 14451 THEN PRINT"ERROR IN DATA
...":END :REM*178
3Ø PRINTCHR$(147)"Z PAGER ACTIVE":PRINT"EN
TER SYS 82Ø TO ACTIVATE" :REM*42
4Ø DATA 32,125,179,169,Ø,133,251,169,141,3
2,114,3,169,15Ø,32,114,3,169 :REM*245
5Ø DATA 159,32,114,3,169,168,32,114,3,169,
177,32,114,3,169,186,32,114,3 :REM*64 ▶
```


MAGIC

```
60 DATA 169,195,32,114,3,169,204,160,3,32,
  30,171,56,165,51,229,49,170 :REM*148
70 DATA 165,52,229,50,184,80,18,160,3,32,3
  0,171,164,251,230,251,230,251 :REM*187
80 DATA 185,43,0,170,185,44,0,32,205,189,1
  69,13,32,210,255,96,84,88,84 :REM*207
90 DATA 84,65,66,58,32,0,65,82,89,84,65,66
  ,58,32,0,86,65,82,84,65,66,58 :REM*16
100 DATA 32,0,83,84,82,69,78,68,58,32,0,70
  ,82,69,84,79,80,58,32,0,70,82 :REM*223
110 DATA 69,83,80,67,58,32,0,77,69,77,83,7
  3,90,58,32,0,70,82,69,69,32,32 :REM*35
120 DATA 58,32,0 :REM*155
```

—MICHAEL MYERS, BEARDSTOWN, IL

\$5AF MORE 1581 HIDDEN MESSAGES

Magic trick \$59F in the August/September 1990 issue of *RUN* revealed two hidden messages buried in the Commodore 1581 disk drive's ROM. My program, More 1581 Messages, which works in both 64 and 128 modes, reveals that there are three other messages at locations \$DC01, \$D00D and \$D549, respectively. The last two messages are a tribute to the smaller size and increased efficiency of the 1581's DOS.

```
0 REM THREE MORE 1581 MESSAGES - HENNING V
  AHLENKAMP :REM*36
10 C=55:C$=CHR$(13):E$="{CRSR DN}":M$="M-R
  ":OPEN 1,8,15:REM CHANGE 8 TO DEVICE #
  :REM*138
20 PRINT#1,M$ CHR$(1) CHR$(C*4) CHR$(C)
  :REM*150
30 FOR I=1 TO C:GET#1,V$:M1$=M1$+V$:NEXT
  :REM*99
40 PRINT#1,M$ C$ CHR$(208) CHR$(49)
  :REM*183
50 INPUT#1,M2$ :REM*166
60 PRINT#1,M$ CHR$(73) CHR$(213) CHR$(15)
  :REM*224
70 INPUT#1,M3$ :REM*191
80 PRINT#1,M1$ C$ E$ M2$ C$ E$ M3$:REM*137
90 CLOSE1 :REM*93
```

—HENNING VAHLENKAMP, MATAWAN, NJ

\$5B0 1571 MESSAGES FOR THE 64/128

If you don't own a 1581 disk drive, you can still find some hidden messages within your 1571. My short 1571 Messages program reveals some information about the developers of this disk drive. The second message, a copyright, is present only in version 5 of the 1571 ROM chip. Drives equipped with earlier versions of the ROM chip will not print the second message.

As with the above example, the 1571 messages can be revealed from either 64 or 128 mode.

```
0 REM 1571 SECRET MESSAGES - HENNING VAHLE
  NKAMP :REM*159
10 CR$=CHR$(13):M$="M-R":OPEN1,8,15
  :REM*222
```

```
20 PRINT#1,M$ CHR$(2)CHR$(128)CHR$(46)
  :REM*199
30 FOR I=1 TO 46 :REM*248
40 GET#1,V$:M1$=M1$+V$:NEXT :REM*25
50 PRINT#1,M$ CHR$(1)CHR$(192)CHR$(55)
  :REM*32
60 FOR I=1 TO 55 :REM*4
70 GET#1,V$:M2$=M2$+V$:NEXT :REM*109
80 PRINT CR$ M1$ M2$:CLOSE1 :REM*189
```

—HENNING VAHLENKAMP, MATAWAN, NJ

\$5B1 COLOR SHUTTER 64

My program, Color Shutter 64, creates a shutter effect. When you run it, you'll see how the border and screen colors change at the press of a key.

Rather than simply change colors, a small animation routine "rolls" lines of color onto the screen, much like window shutters opening. The result is an effect unlike any other you've seen on a C-64. Use it to add spice to otherwise dull programs.

```
0 REM COLOR SHUTTER 64 - RICHARD PENN
  :REM*57
10 FOR T=918 TO 1015:READ D:POKE T,D:CK=CK
  +D:NEXT:POKE 955,200 :REM*42
20 IF CK<>14161 THENPRINT"ERROR IN DATA..."
  :END :REM*222
30 DATA 32,241,183,142,252,3,32,241,183,14
  2,253,3,173,32,208,141,254,3 :REM*84
40 DATA 173,33,208,141,255,3,169,0,141,14,
  220,173,18,208,201,0,208,249 :REM*194
50 DATA 169,200,141,250,3,169,1,141,251,3,
  174,254,3,172,255,3,142,32 :REM*219
60 DATA 208,140,33,208,174,250,3,234,202,2
  08,252,174,252,3,172,253,3,142 :REM*154
70 DATA 32,208,140,33,208,174,251,3,234,20
  2,208,252,238,251,3,206,250,3 :REM*64
80 DATA 208,210,169,1,141,14,220,96
  :REM*157
90 PRINTCHR$(147)TAB(6)"DYNAMIC SCREEN COL
  OR CHANGER" :REM*245
100 PRINTTAB(12)"(2 CRSR DNs)BY RICHARD PE
  NN" :REM*0
110 PRINTTAB(8)"PRESS A KEY TO CONTINUE"
  :REM*30
120 SYS 918,0,0 :REM*172
130 WAIT 198,1:GETA$:X=X+2:IF X>14 THEN X=
  0 :REM*84
140 SYS 918,X,X+1:GOTO 130 :REM*246
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published. For a copy of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope. You'll receive a copy in two or three weeks.

RUN

THE **COMMODORE** 64/128 USER'S GUIDE

January/February 1991

An IDG
Communications
Publication

Tips For **PROGRAMMING SUCCESS**

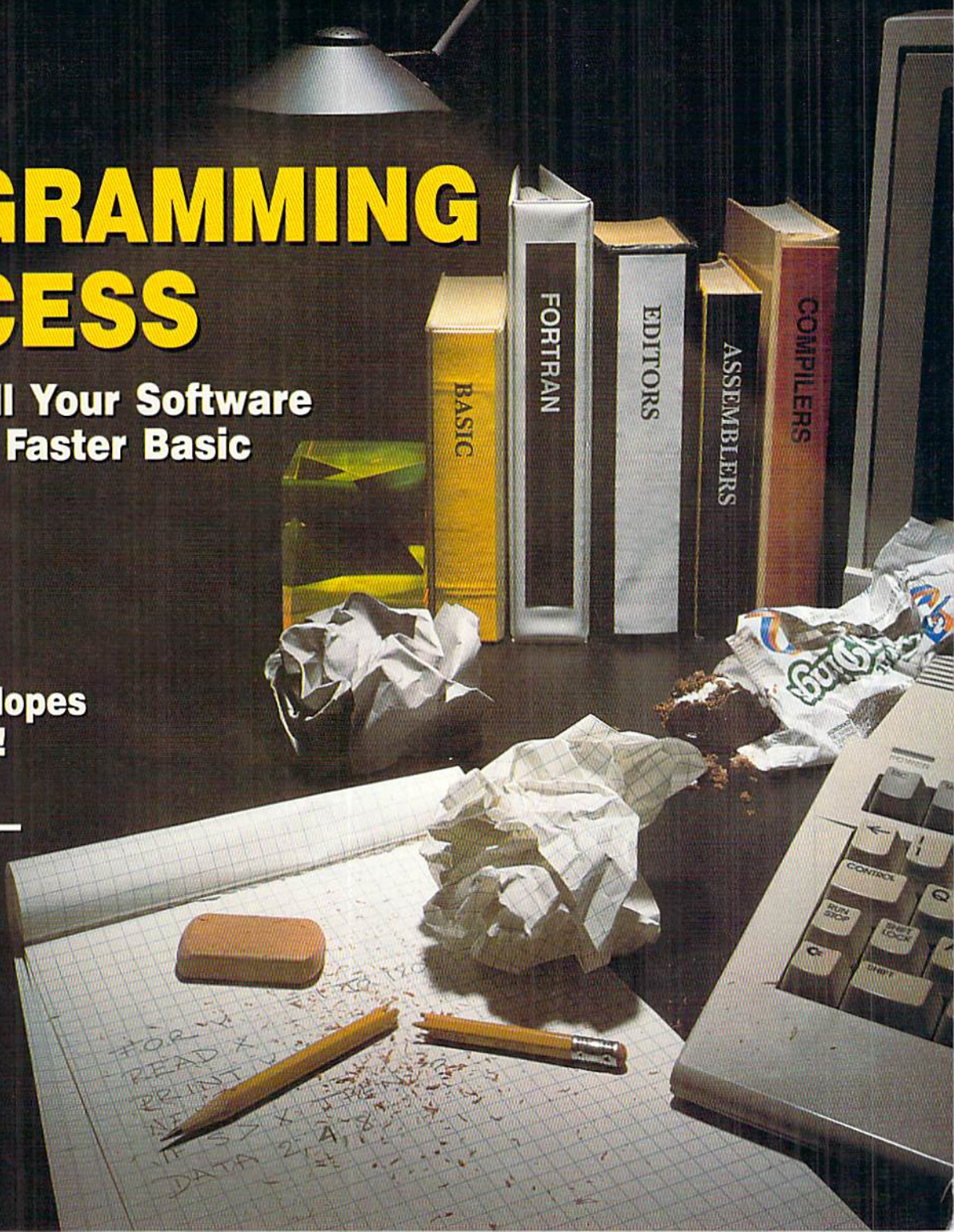
- How to Sell Your Software
- Secrets to Faster Basic

Try This
Point 'N Click
Interface

Address Envelopes
The C-64 Way!

Battling Boas—
C-64 Arcade
Action

U.S.A. \$3.95
CANADA \$4.50



MAGIC

Tricks to kick off the new year in style. Free up stuck keys, create a calendar, and detect whether or not your printer is on.

By TIM WALSH

\$5B2 CALENDAR 64/128

To kick off the start of a new year, here's a calendar creation program for both the C-64 and C-128 in 40- and 80-Column modes. It accurately creates a calendar for any month between the years 1905 A.D. and 2300 A.D.

At the prompt, enter the number of the month, followed by the year. The calendar for that month is displayed instantly. To print the calendar on the printer, place the command OPEN 4,4:CMD4 at the end of line 110.

```
Ø REM CALENDAR 64/128 - JAY TAPLIN:REM*168
1Ø DIMMD(12),MO$(12),NO(12):FORJ=1TO12:REA
  DMD(J),MO$(J),NO(J):PRINTJ;MO$(J)
  :REM*22Ø
2Ø NEXT:DATA1,JANUARY,31,32,FEBRUARY,28,6Ø
  ,MARCH,31,91,APRIL,3Ø,121,MAY,31,152
  :REM*235
3Ø DATAJUNE,3Ø,182,JULY,31,213,AUGUST,31,2
  44,SEPTEMBER,3Ø,274,OCTOBER,31 :REM*117
4Ø DATA3Ø5,NOVEMBER,3Ø,335,DECEMBER,31:INP
  UT"MONTH";M:INPUT"YEAR";Y :REM*44
5Ø SD=((Y-19ØØ)*365)+INT((Y-19ØØ)/4)+MD(
  M))-((Y-19ØØ)*364)+1 :REM*2Ø3
6Ø VV=INT((Y-19ØØ)/2ØØ):SD=SD-VV:VD=SD-(I
  NT(SD/7))*7 :REM*2Ø3
7Ø FORJ=1TO5:L$(J)="" :NEXT:IFVD=1THENGOTO9
  Ø :REM*123
8Ø FORJ=2TOVD:L$(1)=L$(1)+"{3 SPACES}":NEX
  T :REM*231
9Ø CC=VD:LC=1:FORJ=1TONO(M):L$(LC)=L$(LC)+
  RIGHT$("{2 SPACES}"+STR$(J),3):CC=CC+1
  :REM*121
1ØØ IF CC=8THENCC=1:LC=LC+1 :REM*242
11Ø NEXT:PRINT"{SHFT CLR}";V$=MO$(M)+"{2
  SPACES}"+STR$(Y):PRINTSPC(11-(LEN(V$)/
  2))+V$:PRINT :REM*249
12Ø PRINT"{2 SPACES}S{2 SPACES}M{2 SPACES}
  T{2 SPACES}W{2 SPACES}T{2 SPACES}F{2 S
  PACES}S":PRINT:FORJ=1TO5:PRINTL$(J);CH
  R$(13):NEXT :REM*165
13Ø GOTO4Ø :REM*1
```

—JAY TAPLIN, HAMPDEN, ME

\$5B3 STUCK KEY SUBSTITUTE 64

Sooner or later, a key will stick on your computer's keyboard. To put off the unpleasant job of disassembling the computer for at least a little while, I wrote Stuck Key Substitute 64.

This program redefines the back-arrow key as a "d," but it can be redefined as any character you desire. To print

another character, change the ASC code in line 70 as desired. Programmers will note that the entire routine is relocatable in memory.

```
Ø REM STUCK KEY SUBSTITUTE 64 - RICHARD PE
  NN :REM*198
1Ø POKE1,55:POKE 56334,PEEK(56334)AND 254:
  POKE 95,Ø:POKE 96,16Ø:POKE 9Ø,255
  :REM*13
2Ø POKE 91,255:POKE 88,255:POKE 89,255:SYS
  41919:POKE 65535,PEEK(65535) :REM*196
3Ø POKE 56334,PEEK(56334)OR1:POKE 56324,14
  9:POKE 56325,66:POKE 1,53 :REM*12
4Ø X=679:FORT=X TO X+8:READ D:POKE T,D:NEX
  T :REM*242
5Ø POKE 771,X/256:POKE 77Ø,X-PEEK(771)*256
  :REM*132
6Ø DATA 72,169,53,133,1,1Ø4,76,131,164
  :REM*12Ø
7Ø X=ASC("D"):REM ENTER ASCII CODE HERE
  :REM*113
8Ø POKE 6Ø289+57,ASC("D"):PRINT"BACK-ARROW
  KEY NOW PRINTS: "CHR$(X) :REM*79
```

—RICHARD PENN, MONTREAL, QUEBEC

\$5B4 ADDING PROGRAM LINES VIA 80 COLUMNS

Using the C-128 and a combination 40/80 column monitor, you can easily add routines and lines of code to Basic programs. Just load and list the lines to be inserted on the 80-column screen. Press the ESC/X key combination and switch the monitor to 40-Column mode. Load the program that needs the lines added to it.

Renumber that program to allow for the lines listed on the 80-column screen to be inserted. Switch back to the 80-column screen and press return on each of the lines still visible on that screen to add them to the program on the 40-column screen. Only one screen of program lines can be added at a time in this manner, but that's all you'll usually need.

—F. B. WOESTEMEYER, WEST CHESTER, PA

\$5B5 C-128 RAM CHARACTERS

Here's a short machine language routine that copies the contents of the C-128's 40-column character ROM into RAM at locations 8192 to 10239. Once the characters are in RAM, you must enter the following line in Direct mode for the computer to find them:

```
POKE 217,4:POKE 2604,PEEK(2604)AND 240 OR 8
```

You'll know the routine is active if the screen clears when tog- ▶

MAGIC

gled from uppercase/graphics to Uppercase/Lowercase mode by pressing the Commodore and shift keys simultaneously.

```

Ø REM 128 RAM CHARACTERS - CHRIS HAYOSH          :REM*138
1Ø FAST:FOR T = 3Ø72 TO 3114:READ D:POKE T        :REM*138
,D:NEXT:GRAPHIC1,1:GRAPHICØ:SYS 3Ø72:SL          :REM*28
OW                                                  :REM*28
1ØØ DATA 16Ø,Ø,169,Ø,133,251,169,2Ø8,133,2      :REM*246
52,169,Ø,133,253,169,32,133                      :REM*246
11Ø DATA 254,169,1,141,Ø,255,177,251,145,2     :REM*16Ø
53,2ØØ,192,255,2Ø8,247,23Ø,252:REM*16Ø
12Ø DATA 23Ø,254,162,216,228,252,2Ø8,237,9     :REM*92
6

```

—CHRIS HAYOSH, E. LANSING, MI

\$5B6 PRINTER CHECK 64/128

How many times have you had a program crash or quit because either the printer was off or you forgot to turn it on? Use this short routine, Printer Check 64/128, in both your C-64 and C-128 programs to detect whether the printer is on or off. Your programs won't crash again with these few lines of code installed.

```

Ø REM PRINTER CHECK 64/128 - FRANK J. LIVE       :REM*222
RS                                                  :REM*222
1Ø OPEN4,4,7:CLOSE 4                             :REM*249
2Ø IF ST <> Ø THEN PRINT "PROBLEM WITH PRI       :REM*54
NTER":GOTO 4Ø
3Ø PRINT"PRINTER IS ON-LINE & FINE":REM*67
4Ø PRINT "RUN AGAIN Y/N?"                        :REM*73
5Ø GETA$:IF A$="" THEN 5Ø                        :REM*13
6Ø IF A$="N" THEN END                             :REM*176
7Ø GOTO 1Ø                                         :REM*192

```

—FRANK J. LIVERS, MASON CITY, IA

\$5B7 DISK UTILITIES 64/128

Disk Utilities 64/128 is a short disk maintenance program that offers three functions for all Commodore disk drives in both 64 and 128 modes. Options one and two let you lock and unlock files, respectively, on any type of disk. The third disk option displays the number of files on a disk. Choose the fourth option to quit the program. To use the program on a 1581 disk drive, simply change the value of T to 40 and S to 3 in line 20.

```

Ø REM DISK UTILITIES 64/128 - HENNING VAHL      :REM*9Ø
ENKAMP                                             :REM*9Ø
1Ø OPEN1,8,15,"I":OPEN 2,8,2,"#"              :REM*186
2Ø Z$=CHR$(Ø):T=18:S=1:PRINTCHR$(147)"1. L     :REM*5Ø
OCK":PRINT"2. UNLOCK"
3Ø PRINT"3. COUNT FILES":PRINT"4. QUIT":IN      :REM*238
PUT "ENTER OPTION 1-4":CH
4Ø ON CH GOTO 5Ø,5Ø,6Ø,25Ø                      :REM*81
5Ø INPUT "FILE NAME ";F$                        :REM*117
6Ø PRINT#1,"U1";2;Ø;T;S:GET#2,T$,S$:T$=T$+    :REM*1Ø2
Z$:S$=S$+Z$
7Ø IF CH=3 THEN 13Ø                             :REM*113
8Ø FOR V=Ø TO 224 STEP 32:FOR I=V+5 TO V+2     :REM*38
Ø
9Ø PRINT#1,"B-P";2;I:GET#2,A$                  :REM*38

```

```

1ØØ IF A$<>CHR$(16Ø) THEN N$=N$+A$:REM*187
11Ø NEXT:IF N$=F$ THEN 2ØØ                     :REM*82
12Ø N$="":NEXT:GOTO 15Ø                       :REM*68
13Ø FOR B=2 TO 256 STEP 32                     :REM*232
14Ø PRINT#1,"B-P";2;B:GET#2,A$:IF A$<>" " T    :REM*229
HEN N=N+1:NEXT
15Ø S=ASC(S$):IF ASC(T$)>Ø THEN 6Ø:REM*144
16Ø IF CH<> 3 THEN 23Ø                         :REM*219
17Ø PRINT"{CRSR DN}"N" FILES ON DISK"         :REM*56
18Ø GET K$:IF K$="" THEN 18Ø                   :REM*164
19Ø GOTO 2Ø                                     :REM*57
2ØØ PRINT#1,"B-P";2;I-19:GET#2,A$             :REM*49
21Ø IF CH=1 THEN A=ASC(A$) OR 64              :REM*233
22Ø IF CH=2 THEN A=ASC(A$) AND 191            :REM*2Ø
23Ø PRINT#1,"B-P";2;I-19:PRINT#2,CHR$(A);     :REM*2
24Ø PRINT#1,"U2";2;Ø;T;S:GOTO 2Ø              :REM*172
25Ø CLOSE 1                                     :REM*253

```

—HENNING VAHLENKAMP, MATAWAN, NJ

\$5B8 READING ELUSIVE C-128 KEYS

Here's a short program that detects when the ALT, Commodore, shift, control or caps lock keys are pressed. By examining the code, you'll note that this is accomplished by monitoring the value in location 211. If you want to expand the routine to detect when a combination of keys, such as the ALT and shift keys, are pressed simultaneously, just use the following code:

```

1 GETKEY A$
2 PRINT PEEK (211)
3 GOTO 1

```

The value of location 211 will be displayed when a combination of the keys listed above are pressed.

```

Ø REM ALT/COMMODORE/SHIFT/CONTROL/CAPS LOC     :REM*23
K 128 - HENNING VAHLENKAMP
1Ø DO:V=PEEK(211):A$="KEY":B$=CHR$(147)        :REM*124
2Ø IF V=1 THEN PRINTB$"SHIFT "+A$              :REM*185
3Ø IF V=2 THEN PRINTB$"COMMODORE " +A$        :REM*9Ø
4Ø IF V=4 THEN PRINTB$"CONTROL " +A$          :REM*112
5Ø IF V=8 THEN PRINTB$"ALT " +A$              :REM*2Ø8
6Ø IF V=16 THEN PRINTB$"CAPS LOCK " +A$       :REM*181
7Ø LOOP                                         :REM*51

```

—HENNING VAHLENKAMP, MATAWAN, NJ ■

Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10 to \$40 for each trick published in the column. If you'd like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.

RUN

March/April 1991
An IDG
Communications
Publication

U.S.A. \$3.95
CANADA \$4.95

THE **COMMODORE** 64 / 128 USER'S GUIDE

EVERYBODY'S TALKING!

Join the
Excitement
Online

Test Your 128
Music Memory

Boost Your
Basic

Database
Dateline

Super 64
Character
Editor



MAGIC

Speed up your 64, make graphics mode more convenient and dust off your 1541.

By TIM WALSH

\$5B9 BASIC SPEED-UP 64

If you're looking for a way to make your programs run faster, try Basic Speed-Up 64. Adding lines 10000 through 10030 to your Basic programs will make them run about three percent faster. While this program disables the Run/Stop key, it does not disable the effects of a run/stop-restore keypress.

Adding a Gosub10000 slows down the Goto command if the target line is less than the source line. However, the overall increase in speed compensates. Though three percent does not seem significant, in the course of an 8-hour day it will cut approximately 14 minutes from your processing time.

```
0 REM BASIC SPEED UP 64 - RICHARD PENN :REM*179
10 GOSUB 10000 :REM*93
20 PRINT CHR$(147):POKE 1,55:PRINT"NORMAL BASIC SPEED:";
:CLR:GOSUB50 :REM*107
30 POKE 1,53:PRINTCHR$(18)"FASTER BASIC SPEED:";CLR:GOSUB
50 :REM*190
40 END :REM*168
50 TIS="0000000":FOR T=1 TO 1000:A=A+1:NEXT X=TI:PRINT
X CHR$(157)" JIFFIES":RETURN :REM*245
9999 REM BASIC SPEED UP ROUTINE BELOW :REM*248
10000 A=65535:POKE1,55:POKE56334,0:POKE95,0:POKE96,160
:POKE 90,255:POKE91,255 :REM*72
10010 POKE88,255:POKE89,255:SYS41919:POKEA,PEEK(A):POKE
56334,1:POKE56324,149 :REM*34
10020 POKE56325,66:POKE42926,76:POKE42927,177:POKE42928,
167:POKE42977,76 :REM*26
10030 POKE42978,228:POKE42979,167:POKE1,53:RETURN
:REM*194
```

RICHARD PENN
MONTREAL, QUEBEC, CANADA

\$5BA 64 SCREEN DIVIDER

When your C-64 displays an image in Graphics Mode, you're at a disadvantage should you need to type in additional commands and still preserve the current image. Before, you could either type blindly, not seeing your cursor or text, or press run/stop-restore and clear the graphic. This routine gives you five lines of text area at the bottom of the graphics screen.

Activated with SYS 49278, you can keep it in your collection of programming utilities, ready to be accessed as needed. Not only is your graphic image preserved, but you can also view the effects of changes typed in Direct Mode.

```
0 REM 64 SCREEN DIVIDER - JASON MATAKIS :REM*99
10 FOR T=49152 TO 49290:READ D:CK=CK+D:POKE T,D:NEXT
:REM*90
20 IF CK<>14994 THEN PRINT"ERROR IN DATA...":END :REM*69
30 M=1:POKE 49156,M :REM*17
40 SYS 49278 :REM*1
50 FOR T=1 TO 18:PRINT"{CRSR DN}":NEXT:PRINT"TYPE TEXT
```

```
HERE..." :REM*94
60 DATA 246,6,209,1,2,173,17,208,41,127,141,17,208,173,25,208,41,
1,208 :REM*3
70 DATA 16,169,1,141,26,208,173,3,192,240,3,76, 49,234,76,119,
192,173,3 :REM*58
80 DATA 192,141,18,208,208,37,173,17,208,41,223,141,17,208, 173,
22,208 :REM*194
90 DATA 41,239,141,22,208,173,2,192,141,3,192,173,33,208,141,0,
192,173 :REM*163
100 DATA 1,192,141,33,208,24,144,33,173,17,208,9,32,141,17,208,
173,4,192 :REM*121
110 DATA 41,2,10,10,10,13,22,208,141,22,208,169,0,141,3, 192,173,
0,192 :REM*52
120 DATA 141,33,208,169,1,141,25,208,104,168,104,170,104,24,64,
120,169,5 :REM* 234
130 DATA 141,20,3,169,192,141,21,3,88,96 :REM*161
```

JASON MATAKIS
FARIBAULT, MN

\$5BB CHAOS GRAPHICS 64

There is much interest in the study of chaos and the repetitive designs created by mathematical equations, so I wrote a program for the C-64 to demonstrate it. Chaos Graphics 64 applies the principles of chaos to create an unusual, eye-catching graphic pattern on the screen, using the RND statement to generate the random numbers needed.

```
0 REM CHAOS GRAPHICS 64 - MIKE TRAUM :REM*56
10 A=50:B=169:X(1)=B:X(3)=A:X(5)=269:Y(1)=30:Y(3)=B:Y(5)=
B:X=A:Y=B :REM*205
20 POKE 53280,1:POKE 53272,PEEK(53272)OR 8 :REM*184
30 POKE 53265,PEEK(53265) OR 32 :REM*43
40 FOR I= 8192 TO 16191:POKE 1,0:NEXT :REM*209
50 FOR I=1024 TO 2023:POKE 1,1:NEXT :REM*17
60 R=INT(RND(1)*6)+1 :REM*103
70 FOR K=1 TO 5 STEP 2 :REM*214
80 IF R=K OR R=K+1 THEN X=INT ((X+X(K))/2):Y=INT((Y+Y(K))
/2) :REM*12
90 NEXT :REM*220
100 CH(INT(X/8):RO=INT(Y/8):LN=Y AND 7:BI=7-(X AND 7)
:REM*125
110 BY=8192 + RO*320+8*CH+LN :REM*60
120 POKE BY,PEEK(BY)OR (2 {UP ARROW}BI) :REM*100
130 GOTO 60 :REM*5
```

MIKE TRAUM
MILTON, IL

\$5BC DISKNAME/DIRECTORY COLORIZER 64/128

Formatting with Diskname/Directory Colorizer will liven up your work disks. After typing it in, make either the disk's name or the entire directory listing the color of your choice.

After typing in the program and saving it to disk, get a pre-

viously formatted work disk and place it in the drive. Run the program and enter a color for either the disk name or the directory. Finally, enter a new name for the disk, and it will give it a 'quick' format to complete the process. The color changes only affect 64 mode and the C-128's 40-Column mode.

```

Ø REM DISK COLORIZER - CHARLES JONES :REM*254
1Ø INPUT "(N)AME OR (D)IRECTORY";A$ :REM*157
2Ø C$="{CTRL 1} {CTRL 2} {CTRL 3} {CTRL 4} {CTRL 5} {CTRL 6}
{CTRL 7} {CTRL 8} {COMD 1} {COMD 2} {COMD 3} {COMD 4}
{COMD 5} {COMD 6} {COMD 7} {COMD 8} :REM*12
3Ø IF A$="N" THEN X$="{COMD 7}";GOTO 6Ø :REM*1Ø8
4Ø IF A$="D" THEN X$="";GOTO 6Ø :REM*34
5Ø PRINT"IMPROPER INPUT..":GOTO 1Ø :REM*66
6Ø INPUT "DIRECTORY COLOR Ø - 15";C :REM*2Ø2
7Ø DC$=LEFT$(C$,C) :REM*239
8Ø PRINT DC$:INPUT"NAME OF DISK";DN$ :REM*8Ø
9Ø PRINT "INSERT BLANK FORMATTED DISK & PRESS A KEY" :REM*19
1ØØ GET A$:IF A$="" THEN 1ØØ :REM*173
11Ø OPEN 15,8,15,"N";+CHR$(13)+DC$+DN$=X$ :REM*92

```

CHARLES R. JONES
PICAYUNE, MS

\$5BD LOTTERY ODDS 64/128

Do you ever wonder what your odds really are when you buy a lottery ticket? Lottery Odds 64/128 shows you precisely, in either 64 or 128 mode, what your odds are of picking a winning combination from any given range of numbers.

Here's how it works: Suppose you play a lottery that has 40 numbers, 1 to 40. After running the program, type in 40 at the first prompt. Next, if your lottery allows you to choose six numbers, type in 6 at the next prompt. Your answer then appears. You might be surprised at how incredibly low your odds really are.

```

Ø REM LOTTERY ODDS 64/128 - EDWARD NOWAK :REM*1Ø
1Ø INPUT "TOTAL # OF NUMBERS";N :REM*138
2Ø INPUT "HOW MANY SELECTED";R:IFR=1 THEN 2Ø :REM*1Ø4
3Ø K=(N-R)+1:A=K:FOR A=A+1 TO N:K=K*A:NEXT A :REM*2Ø8
4Ø L=1:FOR J=1 TO R:L*=J:NEXT J :REM*41
5Ø C=K/L:PRINT "TOTAL NUMBER OF COMBINATIONS="C: :REM*2Ø7
GOTO 1Ø

```

EDWARD NOWAK
FARMINGTON, CT

\$5BE SCREEN PRINT 64/128

Designed for either the 64 or 128 40-Column mode, Screen Print 64/128 prints all the text on the screen as needed.

After you've typed in and saved the program to disk, run it, and whatever text is on the screen will be directed to the printer. If you'd like Uppercase/Graphics output, remove the 7 in the first statement in line 10 so that it reads:

```
OPEN 1,4
```

The program as listed below is a stand-alone program. To use it as a subroutine, keep lines 10 through 50 near the beginning of your main program. Let the Gosub command reference line 100 (which can be renumbered, of course) and change the end statement in line 140 to a Return statement.

```

Ø REM PRINT SCREEN 64/128 - CALVIN PRESLEY :REM*46
1Ø OPEN 1,4,Ø:PRINT#1,CHR$(27);"V";CHR$(14) :REM*249

```

```

2Ø DIM C$(255):FOR I=Ø TO 31:C$(I)=CHR$(I+64):NEXT :REM*98
3Ø FOR I=32 TO 63:C$(I)=CHR$(I):NEXT :REM*169
4Ø FOR I=64 TO 95:C$(I)=CHR$(I+32):NEXT :REM*233
5Ø FOR I=96 TO 127:C$(I)=CHR$(I+64):NEXT :REM*167
6Ø FOR I=Ø TO 127:C$(I+128)=CHR$(I):NEXT :REM*13
7Ø FOR I=1Ø24 TO 2Ø23:X=PEEK(I):A$=C$(X) :REM*2Ø1
1ØØ IF X>127 THEN S$=S$+CHR$(18)+A$+CHR$(146):T=T+1 :REM*6Ø
11Ø IF X<=127 THEN S$=S$+A$:T=T+1 :REM*64
12Ø IF T=4Ø THEN PRINT#1,S$:S$="":T=Ø :REM*25
13Ø NEXT :REM*5
14Ø PRINT#1:CLOSE1:END :REM*143

```

CALVIN PRESLEY
BRIGHTON, MO

\$5BF SPRITE EXPAND 64

Here's one of the ultimate sprite demos of all time—a sprite stretcher that creates an animated effect by expanding and contracting sprites of various sizes. Sprite Stretch 64 overcomes the two-sprite size limitation imposed by the C-64 by vertically expanding the sprites in a rapid pixel-by-pixel motion.

Pressing the space bar after running the program displays a second set of animated sprites.

Sprite Stretch is sensitive to timing, especially on older versions of the C-64. If the program doesn't work properly, remove line 0 and save the revised program. Reboot the computer, then load the revised program. It should run fine.

```

Ø REM SPRITE STRETCH 64 - RICHARD PENN :REM*39
1Ø GOTO 5Ø :REM*14Ø
2Ø X=56321:Y=239:POKE 56333,127 :REM*146
3Ø POKE A,B:POKE A,C:IF PEEK(X)>Y THEN 3Ø :REM*142
4Ø POKE 56333,129:RETURN :REM*178
5Ø Z=22:POKE 5328Ø,Ø:POKE 53281,Ø :REM*64
6Ø FOR T=16256 TO 16319:READ D:POKE T,D:NEXT:FOR T=2Ø4Ø
TO 2Ø47:POKE T,254:NEXT :REM*23
7Ø V=53248:FOR T=39 TO 46:POKEV+T,12:NEXT:POKEV+37,15:
POKEV+38,11:POKEV+28,255 :REM*99
8Ø FOR T=ØTO14STEP2:POKEV+T,24+J:J=J+24:NEXT:PRINT
CHR$(147)TAB(9)"SPRITE STRETCH" :REM*1Ø1
9Ø FOR T=1TO15STEP2:POKEV+T,5Ø+I:I=I+Z:NEXT:POKEV+
29,255:POKEV+21,255 :REM*94
1ØØ DATA 42,17Ø,17Ø,37,85,87,37,85,87,38,15Ø,151,38,182,183,38,
182,183 :REM*23Ø
11Ø DATA 38,182,183,38,182,183,38,17Ø,183,38,17Ø,183,38,17Ø,183,
38,17Ø :REM*161
12Ø DATA 183,38,19Ø,183,38,182,183,38,182,183,38,182,183,38,182,
183,37 :REM*131
13Ø DATA 245,247,37,85,87,37,85,87,47,255,255,42 :REM*234
14Ø CLR:A=53271:B=255:C=Ø:WAIT 53266,2ØØ:GOSUB 2Ø:Z=1Ø:
GOTO 7Ø :REM*6

```

RICHARD PENN
MONTREAL, QUEBEC, CANADA ■

Magic is RUN's forum where imaginative readers share their programming gems with other RUN readers. If you believe you have a bright idea to make computing easier, faster or just in general more fun, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10-\$40 for each trick published in Magic. If you would like a copy of the latest edition of RUN's Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-sized envelope. Please allow two to three weeks for delivery.

Commodore
M A G A Z I N E

RUN

THE COMMODORE 64/128 USER'S GUIDE

May/June 1991
An IDG
Communications
Publication

U.S.A. \$3.95
CANADA \$4.95

COMPLETE
LIST OF
USER'S GROUPS

CREATE A BEST-SELLER ON DISK!

AND ENTER *RUN*'s CONTEST P. 24

HOW TO DOWNLOAD Q-LINK FILES

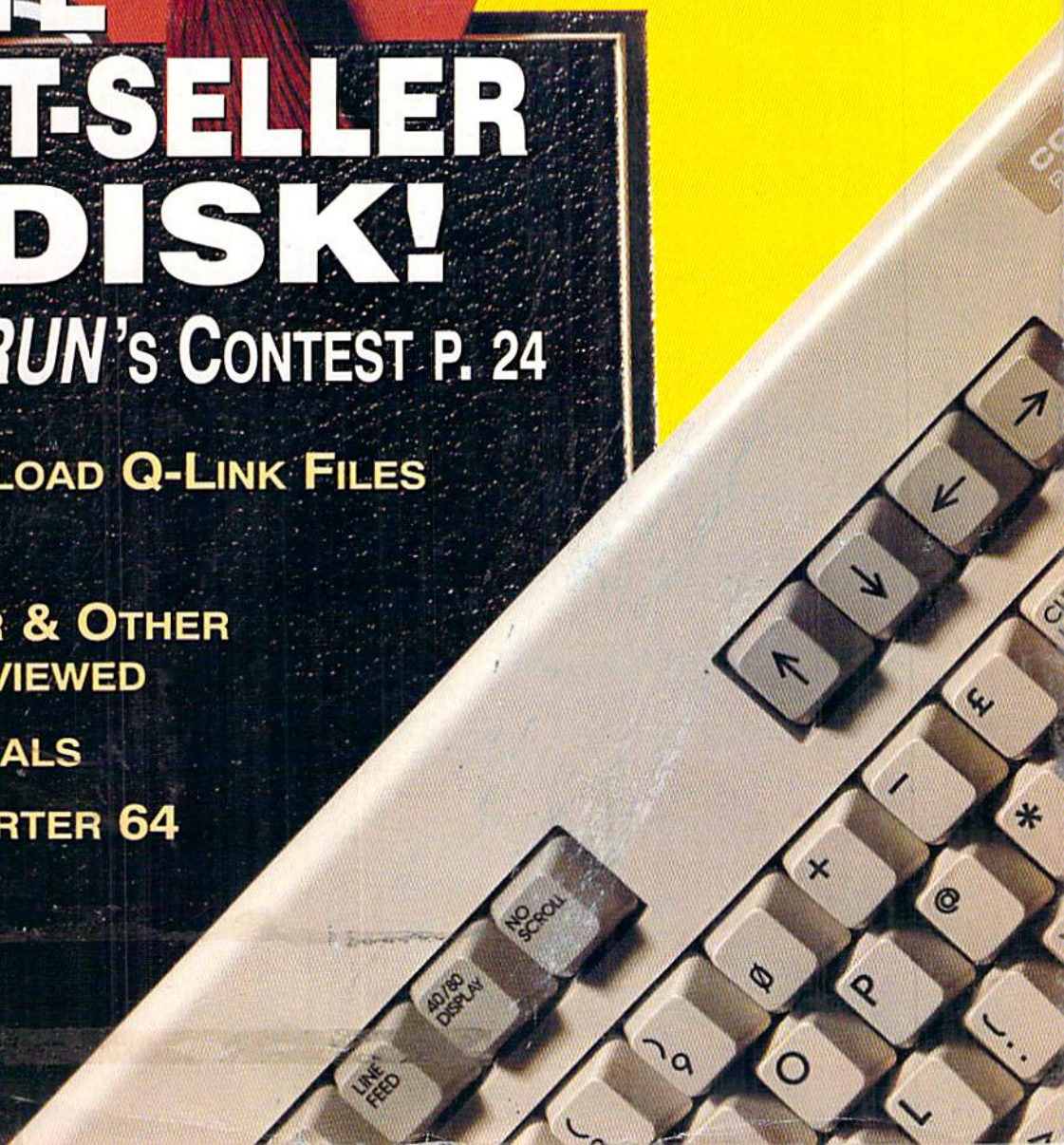
GEOS GEMS

TURBO MASTER & OTHER
HARDWARE REVIEWED

BASIC TIME TRIALS

METRIC CONVERTER 64

AND MORE!



MAGIC

Presto! Character animation for the C-64, using a 1541 with a 128D, and saving your C-64 screens to disk.

Compiled by TIM WALSH

\$5C0 1541 ON THE 128D

If you've stopped using your 1541 since upgrading to a C-128D, you can dig it out of the closet and start using it once again. My program, 1541 on the 128D, cures the incompatibility problems faced by C-128D users because of the 1541's lack of DIP switches to set the device number to 9 or higher. Just connect your 1541 to the C-128D, then load and run my program. You'll then be able to run software that requires the 1541, such as copy-protected games, and use 1541 disk utility cartridges, such as the Epyx Fast Load.

```
0 REM USE A 1541 WITH 128D - TIMOTHY HERD
10 OPEN15,8,15
20 PRINT#15,"M-W"CHR$(119)CHR$(0)CHR$(2)CHR$(9+
32)CHR$(9+64)
30 CLOSE15
```

TIMOTHY HERD
CLAREMORE, OK

\$5C1 AUTO-ANIMATE 64

Auto-Animate keeps the C-64 in step with the times by providing character animation. Running Auto-Animate 64 sets the @ key into animation by rapidly redefining it. You can adjust the animation speed by changing the value of memory location 49182 using the syntax POKE 48182, X, where X is a value from 0 (fastest) to 255 (slowest).

To add more animation, add 8 to the value 48 in memory location 49262 for each additional frame. The program also gives you the option of using custom character sets.

Because this routine is interrupt-driven, it makes a perfect companion to Basic programs. Just incorporate Auto-Animate as a routine into your programs and activate it with SYS 49152.

```
0 REM ANIMATION 64 - STEVEN BOND
10 CK=0:PRINT"USE A CUSTOM CHARACTER SET":INPUT
"AT LOC. 12280";A$
20 IF LEFT$(A$,1)="Y" THEN 6
30 POKE 52,48:POKE 56,48:CLR:POKE 56334,PEEK
(56334)AND254:POKE1,PEEK(1)AND251
40 FORI=0TO511:POKEI+12288,PEEK(I+53248):NEXT:
POKE1,PEEK(1)OR4
50 POKE 56334,PEEK(56334) OR 1
60 FOR I=49152 TO 49279:READA:POKEI,A:CK=CK+A:
NEXT:IF CK<>17600 THEN 100
70 FOR I=49280 TO 49327:READ A:POKE I,A:NEXT
80 POKE 53272,(PEEK(53272)AND 240)+12
90 PRINTCHR$(147)"(CURSR DN)@ AUTO ANIMATE 64 @"
:SYS49152:END
100 DATA 162,0,142,255,207,142,254,207,120,162,
21,160,192,142,20,3,140
```

```
110 DATA 21,3,88,96,72,138,72,152,72,174,255,
207,224,5,240,12,232,142
120 DATA 255,207,104,168,104,170,104,76,49,234,
160,0,174,254,207,189,128
130 DATA 192,141,0,48,232,189,128,192,141,1,48,
232,189,128,192,141,2,48
140 DATA 232,189,128,192,141,3,48,232,189,128,
192,141,4,48,232,189,128
150 DATA 192,141,5,48,232,189,128,192,141,6,48,
232,189,128,192,141,7,48
160 DATA 232,140,255,207,224,48,240,6,142,254,
207,76,37,192,162,0,142
170 DATA 254,207,76,37,192,234,60,126,255,255,
255,255,126,60,24,60,126
180 DATA 126,126,126,60,24,24,24,60,60,60,60,
24,24,24,24,24,24,24,24
190 DATA 24,24,24,60,60,60,60,24,24,24,60,126,
126,126,126,60,24
```

STEVEN BOND
FORT WALTON BEACH, FL

\$5C2 FILETYPE SCRATCH

Scratching files on the C-64 and C-128 is usually done by filename. But did you know that you can scratch by filetype as well? Here's the syntax to scratch all sequential files:

```
OPEN 15,8,15,"S0:*S":CLOSE15
```

To scratch user or program files, replace the S with U or P, respectively. This applies to all drives, including the 1581.

RICHARD PENN
MONTREAL, QUEBEC

\$5C3 FILE ENCRYPTER 64/128

Finally, here's a Magic trick that nearly every C-64 and C-128 user can put to use immediately—File Encrypter 64/128. This program encrypts files from either mode so that unauthorized viewing is difficult, if not impossible.

After typing and saving this program, run it and enter the name of the file to be encrypted. Then enter the name of the new encrypted file and its type (PRG, SEQ or USR), followed by a code number from 0 to 255.

To decode the encrypted file, simply run the program and reverse the process. The code number unscrambles the encrypted file, putting it back into its original state. File Encryptor works on virtually any type of word processing or Basic file. Unfortunately, it does not work with GEOS files. To speed up the process, remove the PRINT D\$.

```
0 REM ENCRYPTER 64/128 - H.VAHLENKAMP
10 INPUT "INPUT FILE: ";I$
20 INPUT "NAME OF OUTPUT FILE: ";P$
30 INPUT "(S)EQ OR (P)RG (S/P)";T$
```



```

40 INPUT "SECRET NUMBER (0-255) ";SC :REM*1
50 PRINT:OPEN6,8,6,IS+,"+T$+",R" :REM*138
60 PRINT:OPEN9,8,9,PS+,"+T$+",W" :REM*229
70 GET#6,D$:IF D$=""THEN D$=CHR$(0) :REM*236
80 SU=ST:V=ASC(D$):X=(SC OR V)-(SC AND V) :REM*13
90 PRINTD$;:PRINT#9,CHR$(X); :REM*173
100 IF SU=0 THEN 70 :REM*58
110 PRINT:CLOSE 9:CLOSE 6 :REM*145

```

HENNING VAHLENKAMP
MATAWAN, NJ

\$5C4 SCREEN RESTORER 64

Even experienced computerists sometimes forget that the C-64's screen is an output device, using a device number of zero. Screen Restorer 64 takes advantage of this often overlooked detail by saving the current screen to disk.

After running the program, use the CURSOR and CHARACTER keys to create and edit the screen to your satisfaction. When it's completed, enter a filename and press RETURN. The screen is saved to disk. Once saved, your screen can be reloaded for display using the syntax LOAD "FILENAME",8,1. Use this technique in your own programs for custom screens.

```

0 REM SCREEN RESTORER 64 - JAMES JONES :REM*169
10 IF A=1 THEN A=2:GOTO 110 :REM*126
20 PRINTCHR$(147)"MAKE A SCREEN, THEN ENTER A " :REM*154
30 PRINT"FILENAME AND PRESS RETURN." :REM*112
40 CLOSE 1:OPEN 1,0:INPUT#1,F$:IF LEN(F$)>16 :REM*159
   THEN 20 :REM*146
50 INPUT#1,A$:CLOSE1 :REM*152
60 CLOSE2:OPEN2,8,1,"0:"+F$+",P,W":PRINT#2,CHR$(0);CHR$(4) :REM*152
70 FORX=1024 TO 2023:PRINT#2,CHR$(PEEK(X)); :REM*54
   :NEXT:CLOSE2 :REM*101
80 PRINTCHR$(147):PRINT"PRESS A KEY TO RESTORE :REM*117
   SCREEN" :REM*198
90 GET A$:IF A$="" THEN 90 :REM*212
100 IF A=0 THEN A=1:LOADF$,8,1 :REM*198
110 GET A$:IF A$=""THEN 110 :REM*212

```

JAMES JONES
KLONDIKE, TX

\$5C5 VANISHING PIXELS 64

Programmers are constantly seeking new, eye-catching ways to clear the screen. I created Vanishing Pixels 64 as a new approach to screen clearing. When run, the program dissolves each character on the screen pixel-by-pixel until they've vanished completely.

Once the program is installed, the vanishing act commences with a SYS 49152. To make the characters reappear, use the following line:

```
POKE 53272,(PEEK(53272) AND 240) OR 4
```

Both commands are included in the program for demonstration purposes. Vanishing Pixels 64 can be used in your own programs for dramatic and unusual screen clearing.

```

0 REM VANISHING PIXELS 64 - RENLY DUTTON:REM*143
10 POKE 52,48:POKE 56,48:CLR:FOR I=49152 TO :REM*154
   49355:READ A:C=C+A:POKE I,A:NEXT :REM*154
20 IF C <> 25446 THENPRINT"ERROR IN DATA..."

```

```

:END :REM*143
30 PRINTCHR$(147)"VANISHING PIXELS 64!":FORT=1 :REM*119
   TO600:NEXT:SYS49152 :REM*113
40 POKE 53272,(PEEK(53272) AND 240) OR 4 :REM*113
50 DATA 169,0,141,167,2,133,251,133,253,169,208, :REM*78
   133,252,169,48,133,254 :REM*191
60 DATA 162,7,160,0,189,196,192,157,52,3,224,0, :REM*129
   240,4,202,76,21,192,120 :REM*36
70 DATA 165,1,41,251,133,1,177,251,145,253,192, :REM*83
   255,240,4,200,76,42,192 :REM*105
80 DATA 165,252,201,223,240,9,230,252,230,254, :REM*158
   160,0,76,42,192,165,1,9,4 :REM*241
90 DATA 133,1,173,24,208,41,240,24,105,12,141, :REM*5
   24,208,160,0,162,0,177 :REM*169
100 DATA 253,61,52,3,201,0,240,7,177,253,93,52, :REM*233
   3,145,253,192,255,240,9 :REM*119
110 DATA 224,7,240,19,200,232,76,90,192,165, :REM*119
   254,201,63,240,14,230,254 :REM*119
120 DATA 200,162,0,76,90,192,162,0,200,76,90, :REM*119
   192,173,167,2,201,8,240,14 :REM*119
130 DATA 238,167,2,160,1,173,52,3,141,255,2, :REM*119
   76,162,192,88,96,185,52,3 :REM*119
140 DATA 136,153,52,3,192,6,240,5,200,200,76, :REM*119
   162,192,173,255,2,200,153 :REM*119
150 DATA 52,3,169,48,133,254,162,0,160,0,76, :REM*119
   90,192,128,2,32,8,1,16,64,4 :REM*119

```

RENLY DUTTON
WESTLAKE, CA

\$5C6 SECRETS OF THE "Cs"

Most C-128 users know a hidden message and the names of the C-128's designers are revealed by entering the command SYS 32800,123,45,6. If you have a C-128 with 64K of video RAM, you can reveal another hidden message with my program. Beyond revealing an otherwise hidden message in the 128, this program is a good test for whether your C-128 is equipped with 16K or 64K of video RAM. If the message is revealed in its entirety, then you have 64K. If the last message is scrambled, then you're using a 16K machine.

```

0 REM C-128 ROM SECRETS - H.VAHLENKAMP :REM*119
10 BANK 15:S1=DEC("63F5"):E1=DEC("640B"):S2=DEC :REM*219
   ("7FC0"):E2=DEC("7FF7") :REM*218
20 FOR L=S1 TO E1:PRINTCHR$(PEEK(L));:NEXT:PRINT :REM*195
30 FOR L=S2 TO E2:PRINTCHR$(PEEK(L));:NEXT:PRINT :REM*195

```

HENNING VAHLENKAMP
MATAWAN, NJ ■

Note: We have experimented with different typstyles for our Magic listings in the last few issues. Unfortunately, this caused some problems with several of our March/April listings. We apologize; you'll find corrections on page 59 in the RUN Amok box. Let us know whether or not you find the listings easy to type in.

Magic is RUN's forum where readers can share their programming "tricks of the trade." If you believe you have an idea whose time for greatness has come—a gem that you're convinced will make computing easier, faster or just more fun for other RUN readers, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN pays \$10-\$40 for each trick published. If you'd like a copy of RUN's Magic Trick Writer's Guide, send a request with a self-addressed, stamped envelope to our offices at the above address.

RUN

THE **COMMODORE** 64 / 128 USER'S GUIDE

August 1991
An IDG
Communications
Publication

U.S.A. \$12.95

INCLUDES
DISK
READ ANY
GOOD COMPUTING
BOOKS LATELY?

PUBLISHING WITH GEOS

- ▶ How to Use geoPublish
- ▶ Create Your Own Newsletter
- ▶ Publishing Tips From a Pro

UPGRADE YOUR
C-128 FOR
IMPROVED GRAPHICS

Plus:

- Fuel Compare
- Yoot
- Roadtest 64
- Super Keys



MAGIC

*Watch the border flash when commands are executed
and get fast directories on your C-64.*

By TIM WALSH

\$5C7 40/80 KEY DETECTOR

Use the following program to detect whether the 40/80 key is up or down in C-128 mode. Simply type in 40/80 Detector and run it with the 40/80 key in the up position. If the program doesn't respond to changes in the key's position, press RUN-STOP/RESTORE with the program running, then run it again.

```
0 REM 40/80 KEY DETECT - JAMES KRETCHMAR:REM*119
10 SCNLCL:PRINT"IF 40/80 KEY IS UNDETECTABLE, PR
   ESS                                     :REM*127
20 PRINT"RUN/STOP-RESTORE KEYS AND RUN AGAIN."
                                       :REM*15
30 P=54533:A$="40/80 KEY IS ":IF PEEK(P)=55 THEN
   PRINT A$"DOWN":END                 :REM*11
40 PRINT A$"UP"                       :REM*168
```

JAMES KRETCHMAR
PHILADELPHIA, PA

\$5C8 TEXT INPUT LIMITER 64/128

Whether you write programs on the C-64 or the C-128, the ability to limit the amount of text typed in at a prompt is important for trapping errors. Input Control 64/128 lets you restrict the length of prompt responses entered.

The program is numbered to be used as a subroutine. Just set the value of P\$ to the message to be answered. The variable NL controls the length of the user input. Change the end of line 50140 to a Return statement and you've got a great input subroutine for either the 64 or 128.

```
0 REM INPUT LENGTH CONTROL 64/128 - STEVE BLAND
                                       :REM*35
50000 P$="ENTER INFORMATION"         :REM*189
50010 NL=16:DIMG$(NL)                :REM*226
50020 PRINTP$"{2 SPACES}{CTRL 9}{CTRL 6}";:FORL=
   1TONL:PRINT" ";:NEXT:PRINT"{COMD 7}{CTRL 0
   } "                                :REM*109
50030 PRINTCHR$(145)SPC(LEN(P$)+2);:C3$=""
                                       :REM*41
50040 FORL=0TONL                     :REM*77
50050 GETG$(L):IFG$(L)=""THEN50050   :REM*208
50060 IFG$(L)=CHR$(20)ANDL=1THEN50050 :REM*167
50070 IFG$(L)=CHR$(20)THENPRINTCHR$(157)"{CTRL 9
   } {CTRL 0}"CHR$(157);:L=L-1:GOTO50050
                                       :REM*138
50080 IFG$(L)=CHR$(13)THENFORL1=LTONL:PRINT" ";:
   NEXTL1:L2=L-1:L=NL:GOTO50120       :REM*76
50090 IFL=NLTHENIFG$(L)=CHR$(20)THENPRINTCHR$(15
   7);:L=L-1:GOTO50070                :REM*209
50100 IFL=NLTHEN50050                :REM*134
50110 PRINTG$(L);                    :REM*202
50120 NEXT:PRINT                     :REM*79
50130 FORL1=0TOL2:C3$=C3$+G$(L1):NEXT :REM*162
```

```
50140 PRINT"{2 CRSR DNs}YOU ENTERED {CTRL2}";C3
   $"{COMD 7}":END:REM CHANGE TO RETURN FOR S
   UBROUTINE                           :REM*51
```

STEVE BLAND
ROMOLAND, CA

\$5C9 COMMAND FLASHER 64

Here's a little routine that causes the border of the C-64's screen to flash whenever a Basic command is executed. Being able to see when commands within a program are being executed makes programs easier to debug. And Command Flasher 64 is relocatable, so programmers have the option of setting the value of K to any memory location not used by other programs.

```
0 REM BASIC STATEMENT FLASHER 64 - REINER RICHTER
   R                                     :REM*144
10 K=700:FOR J=0 TO 35:READ A:T=T+A:POKE K+J,A:N
   EXT                                  :REM*133
20 IF T<> 4587 THENPRINT"ERROR IN DATA...":END
                                       :REM*62
30 PRINT"SYS"K+10"TO ACTIVATE STATEMENT FLASHER"
   :REM*15
40 PRINT"SYS"K+23"TO DE-ACTIVATE STATEMENT FLASH
   ER"                                  :REM*172
50 DATA 238,32,208,201,58,176,15,76,128,0,169,76
   ,133,124,169,188,133               :REM*74
60 DATA 125,169,2,133,124,96,169,201,133,124,169
   ,58,133,125,169,176,133           :REM*189
70 DATA 126,96                       :REM*67
```

REINER RICHTER
KALLISTA, AUSTRALIA

\$5CA RAM CLEAR 64

RAM Clear 64 is a utility that programmers of all ability levels can use. Run this little program to create RAM Clear 64. Next, load it using the syntax LOAD "RAM CLEAR 64",8,1 and enter SYS 828. All memory from location 2048 to 53247 is wiped clean in one second! If you've filled the 64's memory with a Basic program and utilities such as RUN's Checksum, the DOS Wedge, or other machine language routines, use RAM Clear 64 to clear them without turning the computer off.

```
0 REM RAM CLEAR 64 - JAMES TINGLEY
   :REM*44
10 OPEN8,8,8,"0:RAM CLEAR 64,P,W"    :REM*206
20 FOR T= 1 TO 54:READ B:PRINT#8,CHR$(B);:NEXT
   :REM*188
30 CLOSE8:END                         :REM*223
40 DATA 60,3,165,1,72,41,254,133,1,169,0,133,25
   1,133,55,168,162,8,134            :REM*145
50 DATA 252,134,44,145,251,200,208,251,230,252,
   166,252,224,208,208,243           :REM*93
```



```
60 DATA 104,133,1,169,1,133,43,169,160,133,56,16
9,0,32,66,166,76,116 :REM*8
70 DATA 164 :REM*159
```

JAMES S. TINGLEY
BURTONVILLE, MD

\$5CB 128 KEYPAD COMMA

Nearly everyone uses the C-128's numeric keypad for entering numeric data statements. After running this program in 128 mode, the numeric keypad's period key produces a comma, allowing speedier, one-handed data input. Use it once and you'll want to use it every time you need to enter numeric data.

```
0 REM COMMA ON NUMERIC KEYPAD - STEPHEN DIRSCHAU
ER :REM*186
10 FOR T=0 TO 88:POKE 7079+T,PEEK(64128+T):NEXT:
POKE 7161,44:POKE 830,167:POKE 831,27 :REM*84
```

STÉPHANE DIRSCHAUER
TORONTO, ONTARIO

\$5CC ML DIRECTORY 64

If this doesn't quickly become one of your most used C-64 utilities, you aren't using your computer much. Once ML Directory 64 is running, by using the syntax SYS 850 "\$:" you can call up any disk's directory in 64 mode.

You can also use question marks as wildcards for selective directories. Pressing the SHIFT key halts the scrolling of a directory, while pressing the RUN-STOP key exits the directory.

```
0 REM DIRECTORY 64 - REINER RICHTER :REM*112
10 K=850:FOR J=0 TO 134:READ A:POKE K+J,A:T=T+A:
NEXT :REM*247
20 IF T<>17974 THEN PRINT"ERROR IN DATA...":END
:REM*221
30 PRINT"SYS"K,"CHR$(34)"$:"CHR$(34)" TO VIEW
DIRECTORY" :REM*97
50 DATA 32,121,0,201,44,208,120,32,115,0,201,34,
208,113,32,115,0,201,36 :REM*100
60 DATA 208,106,169,234,133,130,133,131,166,122,
164,123,134,7,162,254,134 :REM*48
70 DATA 2,162,0,32,115,0,232,201,0,208,248,138,1
66,7,32,189,255,169,8,170 :REM*136
80 DATA 160,0,32,186,255,32,192,255,162,8,32,198
,255,160,6,208,2,160,4 :REM*183
90 DATA 170,32,207,255,136,208,249,164,144,208,3
2,32,205,189,169,32,32,22 :REM*94
100 DATA 321,32,207,255,208,248,230,2,169,13,32,
22,231,174,141,2,202,240 :REM*166
110 DATA 250,165,197,201,63,208,211,32,204,255,1
69,8,32,195,255,169,240 :REM*236
120 DATA 133,130,169,239,133,131,96 :REM*198
```

REINER RICHTER

\$5CD C-128 HI-RES INTERLACE MODE

This program lets you easily set the C-128's 80-column screen to a half-height, hi-res interlace mode. As on other more expensive computers, the screen does have a tendency to flicker, but it's still easy to read.

```
0 REM INTERLACED/HI-RES 80 COLUMNS - TERENCE BUR
NS :REM*19
10 A=54784:SCNCLR:PRINT"WOULD YOU LIKE (F)ULL OR
(H)ALF SIZE SCREEN?" :REM*15
20 PRINT"PRESS 'Q' TO QUIT" :REM*148
30 GETKEY$ :IF A$<>"F"AND A$<>"H" AND A$<>"Q"THE
N 10 :REM*216
40 IF A$="F" THEN 60 :REM*179
45 IF A$="Q" THEN END :REM*181
50 POKE A,4:POKE A+1,58:POKE A,7:POKE A+1,51:POK
E A,8:POKE A+1,255:POKE A,9:POKE A+1,234:GOTO7
0 :REM*139
60 POKE A,4:POKE A+1,32:POKE A,7:POKE A+1,29:POK
E A,8:POKE A+1,252:POKE A,9:POKE A+1,231
:REM*135
70 COLOR 6,7:COLOR 5,2:GOTO 10 :REM*231
```

TERENCE BURNS
GLOUCESTER POINT, VA

\$5CE It's A SMALL WORLD 64/128

With the following program, C-64/128 users can enjoy a reasonable facsimile of the song *It's a Small World* in either mode.

```
0 REM SMALL WORLD - FRANK LECH :REM*47
10 PRINT"IT'S A SMALL WORLD":S=54272:FOR SW=S TO
S+24:POKE SW,0:NEXT :REM*231
20 POKES+24,15:POKES+2,255:POKES+3,0:POKES+5,9:P
OKES+6,0 :REM*165
30 READ N1,N2,DR :REM*103
40 IF N1=0 THEN PRINT"THE END!":END :REM*147
50 POKES+1,N1:POKES,N2:POKES+4,65:FORZ=1 TO DR:N
EXT :REM*56
60 POKES+4,64:GOTO30 :REM*144
70 DATA 20,169,250,21,227,250,24,146,500,41,83,5
00,32,204,500,36,208 :REM*1
80 DATA 250,32,204,250,32,204,500,30,245,500,30,
245,500,18,104,250,20 :REM*30
90 DATA 169,250,21,227,500,36,208,500,30,245,500
,32,204,250,30,245,250 :REM*178
100 DATA 27,148,500,24,146,500,24,146,500,20,169
,250,21,227,250,24,146 :REM*246
110 DATA 500,32,204,250,36,208,250,41,83,500,36,
208,250,32,204,250,27 :REM*102
120 DATA 148,500,36,208,250,41,83,250,43,200,500
,41,83,250,36,208,250,24 :REM*139
130 DATA 146,500,43,200,500,41,83,500,36,208,500
,32,204,150,32,204,750 :REM*228
140 DATA 32,204,250,41,83,500,43,200,500,36,208,
500,36,208,250,36,208 :REM*169
150 DATA 1000,36,208,750,36,208,250,41,83,500,36
,208,500,41,83,750,41,83 :REM*116
160 DATA 250,41,83,1000,41,83,750,41,83,250,49,1
62,500,41,83,500,43,200 :REM*2
170 DATA 750,43,200,250,43,200,500,41,83,250,36,
208,250,24,146,1000,30 :REM*226
180 DATA 245,1000,32,204,1500,0,0,0 :REM*4
```

FRANK LECH
CHICAGO, IL ■

Send your Magic tricks to Magic, RUN Magazine, 80 Elm St.,
Peterborough, NH 03458. We pay \$10-\$40 for each one used.

RUN

THE **COMMODORE** 64 / 128 USER'S GUIDE

Share Your Files With Other Computers



Special Focus on
REVIEWS

- C-64 Video
- Gateway to GEOS
- C-128 Paint Programs
- Super Cartridge
- GEOS Games
- And More!



October 1991
An IDG
Communications
Publication

U.S.A. \$3.95
CANADA \$4.95



MAGIC

These file-management utilities will make password-protected autoboot files, convert sequential files into program files, automatically verify your saves, and more.

By TIM WALSH

\$5CF AUTO VERIFY 64

If you've ever lost a program due to a disk error or other problem, then you'll be interested in this small machine language utility. Auto Verify 64 automatically verifies any Basic file after it is saved to disk.

To use it, just type it in, save to disk, then run it. Auto Verify 64 is then activated with SYS 832 before each use. Pressing RUN-STOP/RESTORE deactivates it. Auto Verify 64 is also compatible with all fastloaders and cartridges.

```
0 REM AUTO VERIFY 64 - JOE MIGUEL :REM*85
10 FORJ= 832 TO 935:READQ:POKEJ,Q:NEXT
:REM*76
20 SYS832:PRINT:PRINT"AUTO VERIFY ACTIVATE
D":NEW :REM*107
30 DATA120,173,50,3,141,107,3,173,51,3,141
,108,3,169,99,141 :REM*182
40 DATA50,3,169,3,141,51,3,88,96,6,69,82,8
,2,79,82,255 :REM*170
50 DATA79,75,255,234,169,111,72,169,3,72,3
,2,111,223,104,104,234 :REM*225
60 DATA169,1,162,255,160,255,32,213,255,32
,183,255,201,64,240,8 :REM*227
70 DATA169,0,141,89,3,76,141,3,169,6,141,8
,9,3,234,24,169 :REM*132
80 DATA13,32,210,255,174,89,3,189,90,3,201
,255,240,7,232,32 :REM*246
90 DATA210,255,76,151,3,234,96,0 :REM*37
```

—JOE MIGUEL, ST. LOUIS, MO

\$5D0 SUPERBOOTER 64

Superbooter 64 isn't just another autoboot program creator for the C-64; it also provides password protection to your programs.

To use Superbooter 64 with your own programs, just type it in and set A\$ in line 10 to any password you want, using the following syntax: A\$="PASSWORD". Once typed in and saved, run Superbooter 64 and then load the Basic program that you want to modify with autobooting and password protection. Then save the program again, preferably under a different name.

Your program will now load and run automatically, using the syntax: LOAD "FILENAME",8,1. Since it's an autoboot file, there's no need to type run to execute the program.

Once running, press the RUN/STOP key to pause the program. Superbooter is awaiting the password, which you had previously assigned to A\$ in line 10. Enter the password and the RUN/STOP key will function normally.

```
0 REM SUPERBOOTER 64 - JEFF MARTIN:REM*139
10 A$="*YOUR PASSWORD GOES HERE*":REM ***
CHANGE PASSWORD BEFORE USING ***
:REM*212
20 FORI=828TO998:READD:C=C+D:POKEI,D:NEXTI
```

```
:REM*100
30 IF C<>20705 THENPRINT"ERROR IN DATA..."
:END :REM*100
40 IFLEN(A$)>25THENPRINT"PASSWORD TOO LONG
!":END :REM*47
50 IFA$<>" "THENFORI=1TOLEN(A$):POKE997+I,A
SC(MID$(A$,I,1)):NEXTI:POKE997+I,0
:REM*21
60 POKE804,60:POKE805,3:POKE818,125:POKE81
9,3 :REM*173
70 DATA 165,184,240,58,169,237,141,50,3,16
9,245,141,51,3,169,87,141,36 :REM*24
80 DATA 3,169,241,141,37,3,169,1,133,43,16
9,8,133,44,169,143,141,40,3 :REM*41
90 DATA 169,3,141,41,3,133,198,169,82,141,
119,2,169,117,141,120,2,169 :REM*243
100 DATA 13,141,121,2,108,2,3,76,87,241,16
9,147,32,210,255,6,157,169,36 :REM*221
110 DATA 133,193,169,3,133,194,76,237,245,
165,145,201,127,208,71,162,7 :REM*143
120 DATA 189,1,128,157,52,3,202,208,247,18
9,223,3,157,2,128,232,224,7 :REM*251
130 DATA 208,245,169,230,133,36,169,3,133,
37,160,0,132,38,32,228,255,240:REM*157
140 DATA 251,164,38,209,36,208,15,200,177,
36,208,238,169,237,141,40,3 :REM*63
150 DATA 169,246,141,41,3,162,7,189,52,3,1
57,1,128,202,208,247,160,88,96:REM*237
160 DATA 92,3,195,194,205,56,48,0 :REM*71
```

—JEFF MARTIN, ROSEVILLE, CA

\$5D1 KALEIDOSCOPE 128

Watch your C-128's 40-column screen weave its way into wild kaleidoscope patterns with Kaleidoscope 128. Kids will especially enjoy the popular children's song that plays between each changing of the screen colors.

Since it'll create patterns and colors indefinitely, Kaleidoscope 128 is especially handy for adding a little ambience to children's parties or even adult parties.

```
0 REM KALEIDOSCOPE MUSIC 128 - SANFORD FEL
DMAN :REM*115
10 GRAPHIC 1,1:COLOR 1,1:COLOR 4,1::REM*91
20 FOR I=1 TO 3:CIRCLE 1,X1,X2,Y1,Y2
:REM*199
30 T=10:S=57:C=INT(((RND(1))*16)+1)*1
:REM*170
40 COLOR 1,C :REM*2
50 X1=INT(((RND(1))*S)+C)*T :REM*63
60 X2=INT(((RND(1))*S)+7)*T :REM*252
70 Y1=INT(((RND(1))*S)+C)*T :REM*192
80 Y2=INT(((RND(1))*S)+3)*T :REM*207
90 BOX 1,B3,B4,3,4,350 :REM*134
100 B3=INT(((RND(1))*77)+1)*T :REM*82
```



```

110 B4=INT((((RND(1)*S)+9)*T)) :REM*58
120 O3=INT((((RND(1)*77)+1)*T)) :REM*125
130 O4=INT((((RND(1)*S)+5)*T)) :REM*25
140 WIDTH 2:BOX 1,HI,LO,UP,DN,30:CIRCLE 1,
    HI,LO,UP,DN :REM*246
150 HI=INT((((RND(1))*(6*T))+1)*T :REM*231
160 LO=INT((((RND(1))*(4*T))+1)*T :REM*27
170 UP=INT((((RND(1))*(6*T))+1)*T :REM*214
180 DN=INT((((RND(1))*(4*T))+1)*T :REM*225
190 NEXT :REM*65
200 ENVELOPE 9,9,2,1,4,1,777:VOL 15:TEMPO
    13 :REM*168
210 A$="QGEHQGEHQGAGFEQDEFIEFQGC":REM*100
220 B$="ICQCICDEFHGGDDFEDWC":REM*18
230 PLAY A$:PLAY B$:GOTO 20 :REM*174

```

—SANFORD FELDMAN, PHOENIX, AZ

\$5D2 FILE COUNTER 64

Keep track of all the files on your disks by filetype, including program, sequential, relative and user files, with File Counter 64. Once the program is typed and saved, just run it. When you want a tally of all the files on a disk, just place it in the drive and enter SYS 49152.

File Counter 64 counts up to 144 files, making it an ideal utility for the Commodore 1541 and 1571 drives. Please note that while it will work with 3 1/2-inch disks, if you have more than 144 files on a disk in the Commodore 1581 disk drive, there may be some discrepancies in the total number of files.

```

0 REM FILE COUNTER 64 - MICHAEL MYERS :REM*109
10 FOR T= 49152 TO 49445:READ D:POKE T,D:C :REM*88
    K=CK+D:NEXT :REM*88
20 IF CK <> 33525 THENPRINT"ERROR IN DATA. :REM*245
    ..":END :REM*204
30 SYS 49152 :REM*204
40 DATA 169,0,133,251,168,153,27,193,200,1 :REM*251
    92,10,208,248,169,36,133,169 :REM*90
50 DATA 169,48,133,170,169,2,162,169,160,0 :REM*5
    ,32,189,255,169,8,162,8,160,0 :REM*251
60 DATA 32,186,255,32,192,255,162,8,32,198 :REM*98
    ,255,32,207,255,32,207,255 :REM*13
70 DATA 160,0,32,207,255,72,32,183,255,201 :REM*236
    ,64,240,62,104,153,37,193,200 :REM*13
80 DATA 192,32,208,236,165,251,208,5,230,2 :REM*220
    51,76,53,192,160,22,200,185 :REM*193
90 DATA 37,193,201,32,240,248,238,35,193,2 :REM*238
    01,80,208,3,238,27,193,201,83 :REM*220
100 DATA 208,3,238,29,193,201,82,208,3,238 :REM*238
    ,31,193,201,85,208,3,238,33 :REM*193
110 DATA 193,76,53,192,169,218,160,192,32, :REM*238
    30,171,174,27,193,173,28,193 :REM*40
120 DATA 32,205,189,169,231,160,192,32,30, :REM*238
    171,174,29,193,173,30,193,32 :REM*238
130 DATA 205,189,169,244,160,192,32,30,171 :REM*238
    ,174,31,193,173,32,193,32,205 :REM*188
140 DATA 189,169,1,160,193,32,30,171,174,3 :REM*69
    3,193,173,34,193,32,205,189 :REM*25
150 DATA 169,14,160,193,32,30,171,174,35,1 :REM*25
    93,173,36,193,32,205,189,104 :REM*25
160 DATA 169,8,32,195,255,32,204,255,96,13 :REM*220
    ,80,82,71,32,70,73,76,69,83,58 :REM*220
170 DATA 32,0,13,83,69,81,32,70,73,76,69,8 :REM*220
    3,58,32,0,13,82,69,76,32,70,73 :REM*220
180 DATA 76,69,83,58,32,0,13,85,83,82,32,7

```

```

0,73,76,69,83,58,32,0,13,65,76:REM*205
190 DATA 76,32,70,73,76,69,83,58,32,0,0,0, :REM*58
    0,0,0,0,0,0,0,0,0,0

```

—MICHAEL MYERS, BEARDSTOWN, IL

\$5D3 SEQUENTIAL CONVERTER 64/128

My program, Convert Sequential to Program Files 64/128, will read in a sequential file and properly convert it to a program file. The resulting file is compatible with most word processors that can read program files, such as RUN Script and PaperClip.

First enter the name of the sequential file that you want to convert and the name of the program file that you want to create. Sequential Converter keeps you posted of its progress as it performs the conversion, and then it informs you when the process is complete.

```

0 REM CONVERT SEQ TO PRG FILES 64/128 - WA :REM*103
    RD SHRAKE :REM*140
10 PRINT:INPUT"INPUT FILENAME";A$:REM*140
20 INPUT"OUTPUT FILENAME: ";B$:PRINT :REM*15
30 E=0:F=9:PRINT"{5 CRSR RTs}{2 SPACES}CHA :REM*27
    RACTERS CONVERTED." :REM*66
40 DD=8:OPEN15,DD,15 :REM*188
50 OPEN2,DD,2,"0:"A$+",S,R":REM SEQ :REM*188
60 OPEN3,DD,3,"0:"B$+",P,W":REM PRG :REM*75
70 GET#2,C$:G=ST:D=ASC(C$+CHR$(0)):REM*255
80 IFD>192ANDD<219THEND=D-128:GOTO110 :REM*7
90 IFD>64ANDD<91THEND=D-64:GOTO110 :REM*82
100 IFD=13THEND=159 :REM*242
110 PRINT#3,CHR$(D); :REM*105
120 E=E+1:IFE>FTHENF=F+10:PRINT" {CRSR UP} :REM*178
    ";E :REM*167
130 IFG<>64THEN70 :REM*205
140 PRINT#3:PRINT"{CRSR DN}ALL DONE." :REM*230
150 CLOSE2:CLOSE3:CLOSE15 :REM*33
160 END

```

—WARD SHRAKE, COVINA, CA

\$5D4 KEYPRESS FLASH 64

Tired of the same old sedate screen border? This program, Keypress Flash 64, is guaranteed to catch anybody's attention. An interrupt-driven program, it causes the screen border to flash with every press of a key on the C-64.

It also runs in either Program or Direct mode and is activated with SYS 49152. To deactivate, just press the RUN-STOP/RE-STORE key combination.

```

0 REM KEYPRESS FLASH 64 - CHARLES R. JONES :REM*72
    II :REM*51
10 FOR T=49152 TO 49180:READ D:POKET,D:NEX :REM*186
    T :REM*186
20 SYS49152 :REM*21
30 DATA 120,162,13,160,192,142,20,3,140,21 :REM*42
    ,3,88,96,173,203,0,201,100,208 :REM*42
40 DATA 3,76,49,234,141,32,208,76,49,234 :REM*183

```

—CHARLES R. JONES II, PICAYUNE, MS ■

JANUARY/
FEBRUARY 1992

COMING ATTRACTIONS

PRODUCTIVITY PLUS—

Who says there aren't any important developments in this market anymore! Next issue, *RUN* spotlights the RAMLink and RAMDrive devices from Creative Micro Designs. These new products may revolutionize your computing experience.

MAH JONGG AND HIP HOP—

(No, these aren't the names of Charlie Chan's arch nemesis and his sidekick.) The first is an ancient Chinese game of skill recently popularized as "Shanghai;" the second is an exciting arcade game sure to keep you hopping. Both great games are yours, next time.

NEW PRINTERS—

RUN's hardware hard guy, Tim Walsh, puts some new printers through their paces.

PLUS—

RUN's annual list of articles, software reviews, GEOS coverage, type-ins, hints and tips and more.

ReRUN Preview—

Here's the lineup for the November/December ReRUN disk: **Ultimate Sprite Editor**—A powerful program for creating and editing sprites and creating animations; **Volleybound**—One- or two-player fast-paced volleyball for the C-64; **Port Authority**—A handy joystick utility that allows use of either joystick port with games; **Dominoes**—A C-128 version of an all-time popular classic; **Interlace128**—This gives you an 80-Column Interlace mode for GEOS 128; **Cassette Keeper**—Maximize your cassette use when recording music. **PLUS!**—Other bonus programs.

RUN Amok

Oops—we goofed! Two errors were printed in the May/June 1991 Magic column in item **\$5CC**:

- 1) In line 30, replace the semi-colon (;) with a colon (:).
- 2) In line 100, replace the data number 321 with the number 231.

LIST of ADVERTISERS

603-924-7138 OR 800-441-4403

NATIONAL ADVERTISING SALES MANAGER: KEN BLAKEMAN

NORTHEAST/MIDWEST/SOUTHEAST SALES REPRESENTATIVE: HEATHER GUINARD

WESTERN STATES SALES MANAGER: GIORGIO SALUTI, 415-363-5230

Reader Service	Page
Brantford Educational Service	60
Briwall	5
Compsult	60
Creative Micro Design	2
Darkside Software	52
Grapevine Group, Inc., The	56
Indy Software	58
Inkwell Systems	59
Jason Ranheim	59
Lance Haffner Games	40
Loadstar	1
Lyco Computer	13
Montgomery Grant	CII
NRI Schools/McGraw Hill	25

Reader Service	Page
Rio Computers	33
RUN	
Animation II	17
Catalog	44-49
Mind's Eye Video	53
ReRUN VIP	16
Schnedler Systems	32
Software Hut	11
Software Support Int'l	39
Software Support Int'l	58
SOGWAP Software	52
Strategic Simulations	CIV
Superior Micro Systems	56
Tektonics Plus, Inc.	40
Tenex Computer Express	CII

Editorial Offices: All manuscript contributions, letters to the editors, queries, request for writer's guidelines and any other editorial correspondence should be sent to *RUN* Magazine, 80 Elm St., Peterborough, NH 03458. Or call 800-343-0728, between 9 am and 5pm, Monday through Friday.

Subscription problems or address changes: Call 800-274-5241 (in Colorado, call 447-9330), or write to *RUN* Magazine Subscription Services, PO Box 58711, Boulder, CO 80322-8711.

Back issues: Many of *RUN*'s back issues are available for \$3.50, plus \$1 postage and handling, from: *RUN* Magazine, Back Issue Orders, 80 Elm St., Peterborough, NH 03458. Or call 800-343-0728.

ReRUN & Special Disk Inquiries: Write to *RUN* Special Products, 80 Elm St., Peterborough, NH 03458 for price and availability of all issues of ReRUN. Or call 800-343-0728.

RUN ALERT: If you have any difficulties dealing with a company that advertises in *RUN*, contact: Margot Swanson, Customer Service Representative, *RUN* Magazine, 80 Elm St., Peterborough, NH 03458.

RUN's BBS: The RUNning Board is *RUN*'s reader feedback bulletin board. Call the RUNning Board anytime, day or night, seven days a week, for up-to-date information about the magazine, the Commodore industry and other news of interest to all Commodore users. Call 603-924-9704.

User's Group Update

Commodore Country Club

9125 US 19 North
Pinellas Park, FL 34666
BBS (813) 343-7327

Commodore User's Group of Venice

PO Box 3325
Venice, FL 34293

Stone Mountain User's Group

PO Box 1762
Lilburn, GA 30226
BBS (404)925-8829

Commodore User's Group Atlanta

PO Box 2031
Tucker, GA 30085

Rockville Commodore User's Group

505 Marcia Lane
Rockville, MD 20851

Washtenaw Commodore User's Group

PO Box 2050
Ann Arbor, MI 48106-2050
BBS (313)454-0697

CUGSL

PO Box 28424
Creve Coeur, MO 63146-0984
BBS (314) 878-8816

Clark County Commodore

Computer Club
PO Box 26891
Las Vegas, NV 89102

CTUG/NC

321 Hooker Road, Lot #2
Wilmington, NC 28401
BBS (919)791-4919

White Rose Commodore User's Group

PO Box 7501
York, PA 17404-0501

CVCUG

PO Box 2661
San Angelo, TX 76902
Voice (915)949-1400
BBS (915)658-3827

Piedmont User's Group

149 Marshall Terrace
Danville, VA 24541

Mid Ohio Valley Commodore Club

PO Box 2222
Parkersburg, WV 26102-2222

RUN

THE **COMMODORE** 64 / 128 USER'S GUIDE

10 STEPS TO BETTER COMPUTING

**C-128 Chip
Upgrades**

Programming Made Easier

PLUS!

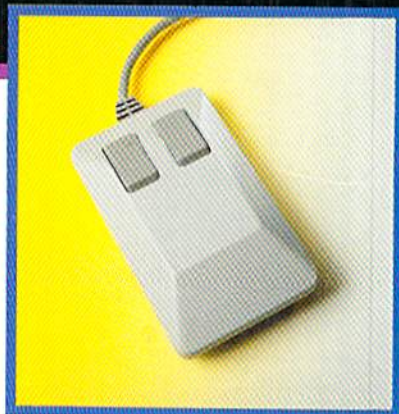
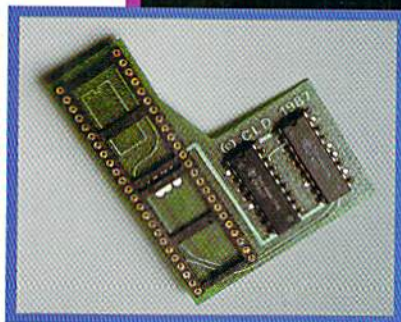
- Volleybound
- Ultimate Sprite Editor
- Dominoes 128
- And More!

December 1991
An IDG
Communications
Publication

U.S.A. \$3.95
CANADA \$4.95



11401	20	C1
11404	C8	
11405	C4	7A
11407	90	E4
11409	B0	DD
1140B	A5	2E
1140D	F0	10
1140F	20	38



MAGIC

Put a beep into your prompts, add a stopwatch to your Commodore, and append files in either 64 or 128 mode.

By TIM WALSH

\$5D5 CURSOR BEEP 64

Cursor Beep 64 is an interrupt-driven and relocatable routine that "beeps" in synch with the cursor's flashing. Add it to your programs to signal user input. Use SYS 65418 or RUN-STOP/RESTORE to turn it off.

```
Ø REM BEEPER - ROBERTO MORASSI :REM*37
1Ø FORX=ØTO52:READY:POKE68Ø+X,Y:A=A+Y:NEXT :REM*11
2Ø IFA<>55Ø9THENPRINT"DATA ERROR !":END :REM*2Ø
3Ø SYS 68Ø :REM*146
4Ø DATA 12Ø,165,2Ø,24,1Ø5,38,141,2Ø,3,165, :REM*229
    21,1Ø5,Ø,141,21,3,169,4,141 :REM*229
5Ø DATA 19,212,169,24Ø,141,2Ø,212,169,5Ø,1 :REM*236
    41,15,212,169,13,141,24,212 :REM*236
6Ø DATA 88,96,165,2Ø7,24Ø,3,169,17,44,169, :REM*186
    16,141,18,212,76,49,234
```

—ROBERTO MORASSI, PISTOLA, ITALY

\$5D6 SCREEN BANNER 64

Wouldn't it be nice to have screen titles that aren't affected when you clear the screen? Screen Banner 64 makes it possible. It places a centered title of up to 40 characters across the top of the screen. Press RUN-STOP/RESTORE to clear it.

```
Ø REM SCREEN BANNER 64 - KELLY KIPFERL :REM*42
1Ø WD$="":FOR T=53Ø32 TO 532Ø2:READ D:CK=C :REM*124
    K+D:POKE T,D:NEXT :REM*233
2Ø IF CK <> 24Ø13 THEN PRINT"ERROR IN DATA :REM*185
    ...":END :REM*185
3Ø PRINTCHR$(147)"ENTER A MESSAGE UP TO 4Ø :REM*144
    CHARACTERS IN LENGTH":INPUT WD$ :REM*124
4Ø LN=LEN(WD$) :REM*124
5Ø IF LN>Ø AND LN<41 THEN 7Ø :REM*24
6Ø PRINT"INVALID MESSAGE!":GOTO 3Ø:REM*136
7Ø POKE 53244,224 :REM*121
8Ø SYS 53Ø32 :REM*216
9Ø END :REM*218
1ØØ DATA 16Ø,1,177,45,41,128,2Ø1,128,24Ø,1 :REM*163
    ,96,2ØØ,177,45,2Ø1,41,144,1,96:REM*163
11Ø DATA 141,211,2Ø7,2ØØ,177,45,141,77,2Ø7 :REM*99
    ,2ØØ,177,45,141,78,2Ø7,162,Ø :REM*99
12Ø DATA 189,1Ø3,136,157,212,2Ø7,232,236,2 :REM*186
    11,2Ø7,2Ø8,244,173,211,2Ø7,74 :REM*186
13Ø DATA 141,255,2Ø7,169,2Ø,56,237,255,2Ø7 :REM*145
    ,141,255,2Ø7,173,2Ø,3,2Ø1,119 :REM*145
14Ø DATA 2Ø8,75,173,21,3,2Ø1,2Ø7,2Ø8,68,96 :REM*27
    ,173,252,2Ø7,16Ø,Ø,2Ø4,255,2Ø7 :REM*27
15Ø DATA 24Ø,7,153,Ø,4,2ØØ,76,124,2Ø7,162, :REM*151
    ,Ø,189,212,2Ø7,2Ø1,65,144,3,56 :REM*151
16Ø DATA 233,64,153,Ø,4,232,2ØØ,236,211,2Ø
```

```
7,2Ø8,236,192,4Ø,24Ø,1Ø,173 :REM*225
17Ø DATA 252,2Ø7,153,Ø,4,2ØØ,76,158,2Ø7,16 :REM*46
    5,214,2Ø1,Ø,2Ø8,5,169,17,32 :REM*46
18Ø DATA 21Ø,255,1Ø8,253,2Ø7,173,2Ø,3,141, :REM*82
    253,2Ø7,173,21,3,141,254,2Ø7 :REM*82
19Ø DATA 12Ø,169,119,141,2Ø,3,169,2Ø7,141, :REM*2Ø6
    21,3,88,96
```

—KELLY KIPFERL, HORSEHEADS, NY

\$5D7 SEQ FILE COPY 64/128

Seq File Copy 64/128 is an easy way to copy sequential files without resorting to a file-copy utility.

When you're ready to copy a sequential file, just run the program, enter the name of the file and the device numbers for the source and destination disks, then sit back and let the program do its thing. If you're using one drive, the filename of the copy will be prefixed with the word COPY. Seq File Copy works on the C-64 and the 128, and is compatible with the 1541, 1571 and 1581 disk drives.

```
Ø REM COPY SEQUENTIAL FILES 64/128 - MATTH :REM*47
    EW PRICE :REM*14Ø
1Ø INPUT"FILENAME:";F$: :REM*1Ø1
2Ø IF F$="" THEN 1Ø :REM*147
3Ø INPUT"SOURCE DRIVE:";SD :REM*238
4Ø INPUT"TARGET DRIVE:";TD :REM*2Ø2
5Ø FA$=F$:IF SD=TD THEN FA$="COPY"+F$ :REM*141
6Ø OPEN2,SD,2,F$+",S,R" :REM*14Ø
7Ø OPEN1,TD,3,FA$+",S,W" :REM*128
8Ø GET#2,A$ :REM*158
9Ø IF ST<> 64 THEN 11Ø :REM*117
1ØØ IF ST=64 THEN 12Ø :REM*75
11Ø PRINT#1,A$;:GOTO 8Ø :REM*178
12Ø CLOSE2:CLOSE1:END :REM*113
```

—MATTHEW PRICE, WILMINGTON, NC

\$5D8 APPENDER 64

Appending multiple programs on the C-64 is a cinch with this relocatable machine language program. Type in, save and run Appender 64, then load the primary program that needs programs appended to it. Type SYS 680 to activate Appender 64, and load the second program. It will automatically be appended to the first. It is essential that the second program have line numbers higher than the first. Disable Appender 64 by entering SYS 65418.

```
Ø REM APPENDER 64 - ROBERTO MORASSI:REM*62
1Ø FOR T=ØTO33:READ D:POKE68Ø+T,D:CK=CK+D: :REM*19Ø
    NEXT :REM*19Ø
2Ø IF CK<>3365 THEN PRINT"ERROR IN DATA... :REM*2Ø7
    ":END :REM*2Ø7
3Ø DATA 165,2Ø,24,1Ø5,16,141,48,3,165,21,1
```



```
240 WD$(24)="TO ":WD$(25)="YOU!" :REM*101
250 RETURN :REM*137
```

—ROBERTO MORASSI, PISTOLA, ITALY

\$5DB STOPWATCH 64/128

With Stopwatch 64/128, you can start and stop timing with the press of any key. When you run the program, press any key to start the timer, which uses the computer's CIA chip for accuracy to $1/100$ of a second. It displays seconds, minutes and hours. Then press any key to stop the timer.

```

0 REM STOPWATCH 64 - JAMES BARNETT :REM*53
10 E$="":PRINTCHR$(147) :REM*192
20 PRINT"PRESS A KEY TO START TIMER":GOTO
    130 :REM*207
30 H=0:M=0:A=TI/60 :REM*203
40 LT=(INT(((TI/60)-A)*100))/100 :REM*24
50 S=LT:IF S<=59 GOTO 90 :REM*49
60 M=M+1:A=TI/60 :REM*120
70 IF M<59 GOTO 90 :REM*177
80 H=H+1:M=0 :REM*57
90 PRINT"{8 CRSR DNs}"H;M;S :REM*66
100 PRINT"PRESS A KEY TO STOP":GET E$:IF E
    $=""GOTO 120 :REM*218
110 PRINTCHR$(17):GOTO200 :REM*85
120 PRINTCHR$(19):GOTO400 :REM*143
130 Q$="" :REM*103
140 GET Q$:IF Q$=""THEN 140 :REM*144
150 PRINT CHR$(147):GOTO300 :REM*

```

—BOB RENAUD, WASHINGTON, MA

—JAMES BARNETT, OSPREY, FL.

After running the program, you'll be prompted to enter the name of the birthday boy or girl. Press RETURN and the birthday song will play non-stop. It's a great way to get your Commodore involved at your children's next birthday party.

```

0 REM HAPPY BIRTHDAY 64/128 - PETE BAKER
                                :REM*102
10 DIM WD$(25):PRINTCHR$(147)"{ {4 CRSR DNs}
   "                               :REM*27
20 INPUT "NAME";NM$             :REM*243
30 GOSUB170                     :REM*112
40 INPUT"(S)LOW (M)ED (F)AST";T$ :REM*76
50 T=1450-(T$="S")*200+(T$="F")*200:REM*76
60 N$="##">#40##">#<4##UE40)JJE4<4" :REM*11
70 D$="**&&&&*&&&&*&&&&*&&&&#" :REM*230
80 S=54272:FORJ=STOS+23:POKEJ,0:NEXT
                                :REM*14
90 POKES+5,13:POKES+12,9:POKES+24,15
                                :REM*39
100 PRINT "{SHFT CLR}{5 CRSR DNs}" :REM*44
110 FORJ=1TO25:PRINT WD$(J);:N=ASC(MID$(N$,
   J,1))+15                      :REM*20
120 D=ASC(MID$(D$,J,1))-34:POKES+1,N
                                :REM*224
130 POKES+8,N/2:POKES+4,17:POKES+11,33
                                :REM*35
140 FORZ=1TOT/D:NEXT:POKES+4,16 :REM*149
150 POKES+11,32:NEXT:POKES+24,0 :REM*0
160 GOTO60:END                  :REM*136
170 WD$(1)="HAP":WD$(2)="PY ":WD$(3)="BIRT
   H":WD$(4)="DAY ":WD$(5)="TO " :REM*74
180 WD$(6)="YOU, "+CHR$(13)+CHR$(13)
                                :REM*180
190 WD$(7)="HAP":WD$(8)="PY ":WD$(9)="BIRT
   H":WD$(10)="DAY " :REM*203
200 WD$(11)="TO ":WD$(12)="YOU, "+CHR$(13)
   +CHR$(13) :REM*108
210 WD$(13)="HAP":WD$(14)="PY ":WD$(15)="B
   IRT H":WD$(16)="DAY " :REM*14
220 WD$(17)="DEAR ":WD$(18)=NM$:WD$(19)=""
   +CHR$(13)+CHR$(13) :REM*146
230 WD$(20)="HAP":WD$(21)="PY ":WD$(22)="B
   IRT H":WD$(23)="DAY " :REM*113

```

Drive Status 64 gives C-64 users a utility that 128 owners have in the command PRINT DSS. Run Drive Status 64 to create the machine language file ERROR MSG on disk. When you're typing programs on your C-64, load the file beforehand with "ERROR MSG",8,1. Then, whenever a disk error occurs, you can check the drive status by entering SYS 679.

```

0 REM DISK DRIVE STATUS 64 - JAME T. JONES
:REM*107
10 FOR T=679 TO 712:READ D:POKE T,D:CK=CK+
D:NEXT :REM*
20 IF CK <> 5238 THEN PRINT"ERROR IN DATA.
..":END :REM*215
30 DATA 32,204,255,165,186,32,180,255,169,
111,133,185,32,150,255,169,13,32
:REM*216
40 DATA 210,255,32,165,255,201,13,208,246,
32,210,255,76,171,255,96 :REM*82
50 SA=679:EA=713:H1=INT(SA/256):L1=SA-256*
H1:H2=INT(EA/256):L2=EA-256*H2 :REM*58
60 SYS 57812"ERROR MSG":8:POKE 193,L1:POKE
194,H1:POKE 174,L2:POKE 175,H2:REM*124
70 SYS 62954:CLOSE15:OPEN15,8,15,"I0":CLOS
E15 :REM*103
80 PRINTCHR$(147)"DRIVE STATUS IS ACTIVE."
:PRINT"SYS 679 FOR DRIVE STATUS"
:REM*181

```

—JAMES JONES, KLONDIKE, TX ■

For a couple of corrections to the September/October Magic, see RUN Amok on page 64.

Commodore[®]
MAGAZINE

RUN

THE **COMMODORE** 64/128 USER'S GUIDE

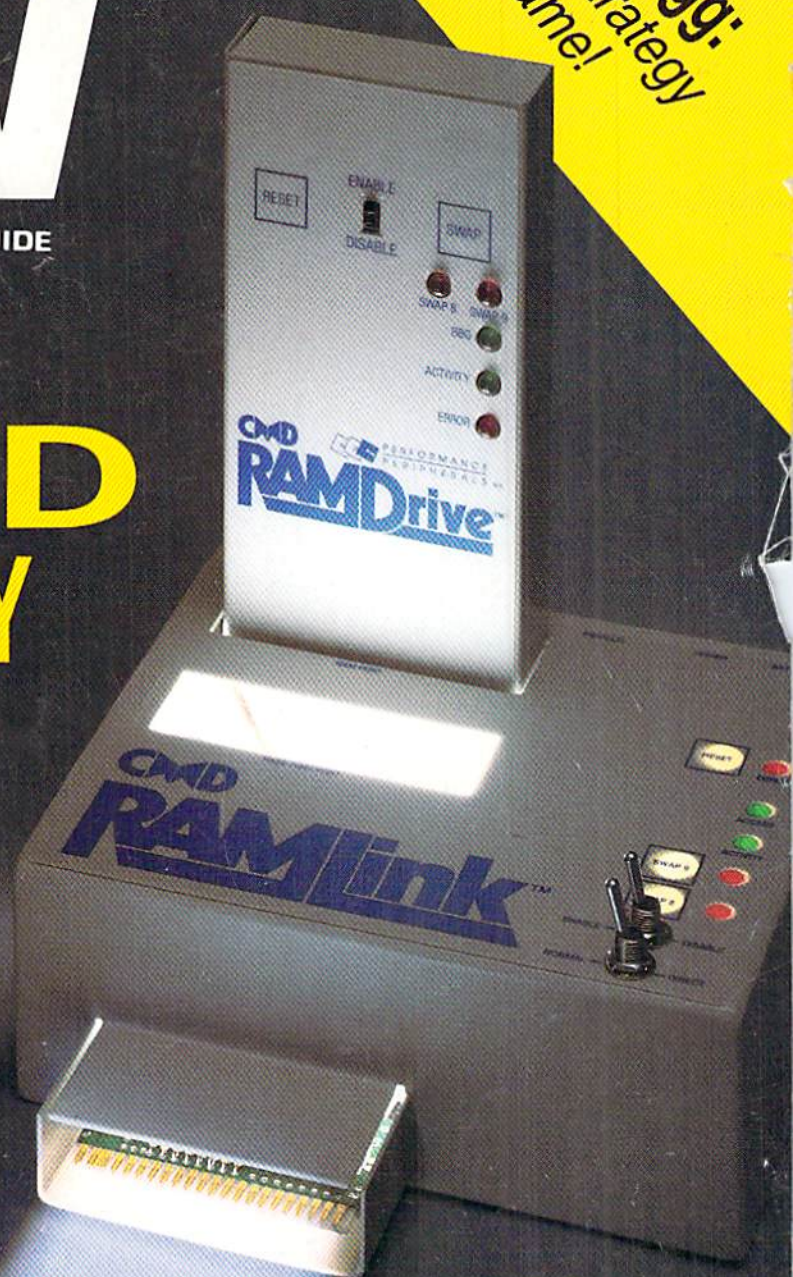
Mah Jongg:
Super Strategy
Game!

EXPAND YOUR MEMORY

- ▶ Mega-Memory
- ▶ Software Compatible
- ▶ High Speed
- ▶ Battery-Backed
- ▶ Easy to Use

PLUS!

- C-128 Mouse-Cursor Action
- GEOS AutoExec Files
- Calendar Program
- Two New Printers
- 1991 Article Index



January/February 1992

An IDG
Communications
Publication

U.S.A. \$3.95
CANADA \$4.95

MAGIC

Learn how to speak like an executive, hide files in GEOS and reset your 64 without losing the Basic program that's loaded into memory.

Compiled by TIM WALSH

\$5DD BUZZWORDS 64/128

Listen carefully to government and business officials when they're interviewed on television or radio, and you'll soon notice they communicate in what is known as "empty rhetoric." Generally at a loss for meaningful words, elected officials often use words and phrases not for their meaning, but rather for their impressive sound.

Just type in the listing using *RUN's* Checksum in either 64 or 128 mode. When run, Buzzwords 64/128 lets your C-64 or C-128 generate a steady stream of such phrases. They won't make a lot of sense, but they'll provide you with an executive's vocabulary.

```
Ø REM BUZZWORDS 64/128 - RON PRESCOTT
1Ø DIM X$(5):DIM Y$(5):DIM Z$(5)
2Ø B$="BUZZWORD PHRASES"
3Ø PRINT,B$
4Ø PRINT:PRINTCHR$(14)
5Ø LET X=INT(RND(1)*5)+1
6Ø X$(1)="INTEGRATED"
7Ø X$(2)="TOTAL"
8Ø X$(3)="SYSTEMATIC"
9Ø X$(4)="SELF-CONTAINED"
1ØØ X$(5)="QUASI-FUNCTIONAL"
11Ø LET Y=INT(RND(1)*5)+1
12Ø Y$(1)="MANAGERIAL"
13Ø Y$(2)="ORGANIZATIONAL"
14Ø Y$(3)="MONITORED"
15Ø Y$(4)="RECIPROCAL"
16Ø Y$(5)="HALF-LIFE"
17Ø LET Z=INT(RND(1)*5)+1
18Ø Z$(1)="BUDGETARY OPTIONS."
19Ø Z$(2)="FLEXIBILITY."
2ØØ Z$(3)="CAPABILITY."
21Ø Z$(4)="STABILITY."
22Ø Z$(5)="TRANSPARENT LAYERS."
23Ø EN$=CHR$(14):A$=" " :B$="{SHT L}ET'S
IMPLEMENT":C$=" "
24Ø PRINT{2 SPACES}B$;A$; X$(X);C$;Y$(Y);C
$;Z$(Z)
25Ø FORT=1 TO 12ØØ:NEXT:GOTO4Ø
```

—RON PRESCOTT, MODESTO, CA

\$5DE IMITATION RESET 64

Imitation Reset 64 is just that—an imitation of a "real" system reset. After the program is typed in and run, entering a SYS 49152 from either Direct or Program mode causes the screen to briefly freeze, shrink a few pixels in size on all four sides, then reset itself. The all-too-familiar Commodore 64 startup screen appears in a few seconds.

Unlike a "real" reset, however, this program leaves Basic programs undisturbed in memory after the reset! By placing

this routine in your own programs, all but the most experienced programmers will be baffled by your programming prowess.

```
Ø REM IMITATION RESET 64 - MICHAEL GRIMM
1Ø FORT= 49152 TO 4932Ø
2Ø READD:POKET,D:CK=CK+D:NEXT:IFCK<>14997T
HENPRINT"ERROR IN DATA!":END
3Ø SYS 49152
4Ø DATA 169,196,32,16Ø,192,16Ø,9,162,255,3
2,179,238,2Ø2,2Ø8,25Ø,136,2Ø8
5Ø DATA 245,169,2ØØ,141,22,2Ø8,169,14,141,
32,2Ø8,169,6,141,33,2Ø8,169
6Ø DATA 147,32,21Ø,255,162,Ø,189,52,192,32
,21Ø,255,232,224,78,2Ø8,245
7Ø DATA 96,13,32,32,32,32,42,42,42,32,6
7,79,77,77,79,68,79,82,69,32
8Ø DATA 54,52,32,66,65,83,73,67,32,86,5Ø,3
2,42,42,42,42,13,13,32,54,52
9Ø DATA 75,32,82,65,77,32,83,89,83,84,69,7
7,32,32,51,56,57,49,49,32,66
1ØØ DATA 65,83,73,67,32,66,89,84,69,83,32,
7Ø,82,69,69,13,13,13,83,84,69
11Ø DATA 77,32,32,51,56,57,49,49,32,66,65,
83,73,67,32,66,89,84,69,83,32
12Ø DATA 7Ø,82,69,69,141,22,2Ø8,169,14,141
,134,2,96
```

—MICHAEL GRIMM, SANDWICH, IL

\$5DF HIDING FILES USING GEOS

If you're a GEOS user, you have access to a top-notch method of file security for all of your non-GEOS disks. Here's how: After activating either GEOS 64 or 128, place a non-GEOS disk into the drive and click on the drive's icon. Answer yes at the prompt to convert the non-GEOS disk to GEOS format.

All of the files on the disk will appear on the deskTop screen as Commodore files. To hide any files, just drag them to the bottom border and deposit them. When done, use the GEOS Close option to close the disk.

After resetting the computer, powering up in either 64 or 128 mode, then listing the directory, you'll notice that the files dragged to the border are no longer visible. To access them, run GEOS, place that disk in the drive, and drag those border files back into the deskTop.

—LEE MACDONALD, LANSING, MI

\$5EO IBM-PC KEYPAD ON C-128

Computerists who use MS/DOS-compatibles and C-128s often find themselves accidentally typing numbers on the screen. That's because they're used to using the PC's numeric

keypad to control cursor movement.

As any C-128 user knows, pressing numbers on the keypad will print just that—numbers. To make the C-128 more user-friendly to PC users, Cursor Keypad 128 redefines the keypad's numbers as follows:

8 = Cursor up
4 = Cursor left
6 = Cursor right
2 = Cursor down
7 = Home
1 = Insert
3 = Delete

You can toggle between Cursor and Keypad mode by pressing the SHIFT-LOCK key. The 5 and 9 keys are disabled in Keypad mode.

```
0 REM CURSOR/NUMERIC 128 KEYPAD - JOHN CAM
  PION                                     :REM*64
10 FOR T=0 TO 88:POKE 6912+T,PEEK(64128+T)
   :NEXT                                  :REM*211
20 POKE 830,0:POKE 831,27                :REM*115
30 S=6977:POKE S+4,157:POKE S+3,17:POKE S+
   12,29:POKE S,145:POKE S+6,148         :REM*36
40 POKE S+14,20:POKE S+5,19:POKE S+1,0:POK
   E S+13,0                               :REM*36
```

—JOHN CAMPION, RANDALLSTOWN, MD

S5E1 SCREEN EDIT 64

Here's a short machine language routine that every C-64 owner can put to use. Screen Edit 64 lets you place text anywhere on the screen and perform some fancy moves with screen characters as well.

The syntax for Screen Edit 64 is as follows:

SYS EDIT, COLUMN, ROW, "{text}"

The syntax is self-explanatory; just enter the SYS number, row and column, then the text enclosed within quotation marks. A sample program is included at the end of the routine to show how messages can be moved at lightning speed using Screen Edit.

```
0 REM SCREEN EDIT 64 - HENRY SHOTWELL
                                     :REM*29
10 SYS 58692:FOR T=700 TO 726:READ D:CK=CK
   +D:POKE T,D:NEXT                  :REM*177
20 IF CK<>3566 THEN PRINT"ERROR IN DATA ST
   ATEMENTS..." :END              :REM*114
30 EDIT=700                          :REM*160
40 PRINTCHR$(147)"SYNTAX:SYS EDIT,COL,ROW,
   "CHR$(34)"TEXT"CHR$(34)         :REM*22
50 DATA 32,253,174,32,158,183,138,72
                                     :REM*197
60 DATA 32,253,174,32,158,183,104,168
                                     :REM*24
70 DATA 24,32,240,255,32,253,174   :REM*174
80 DATA 76,164,170,0               :REM*21
90 REM DEMO OF SCREEN EDIT 64       :REM*149
100 SYS EDIT,1,1,CHR$(147)          :REM*250
110 SYS EDIT,0,1,"TOP OF SCREEN"    :REM*228
120 SYS EDIT,0,24,"BOTTOM OF SCREEN"
                                     :REM*73
130 FOR I=1 TO 25                   :REM*72
140 SYS EDIT,I,12," FORWARD ":FORT=1 TO 10:N
   EXT:NEXT                          :REM*131
```

```
150 FOR I=25 TO 1 STEP -1          :REM*227
160 SYS EDIT,I,12,"BACKWARDS ":FORT=1 TO 10:
   NEXT:NEXT                          :REM*219
```

—HENRY E. SHOTWELL, BERWICK, PA

S5E2 DUAL-SCREEN 64

If you're a C-64 programmer needing a second instruction screen, Dual Screen 64 is for you. Incorporate this routine in your own programs to create a 1000-byte second screen that's independent of your primary screen.

After Dual Screen 64 is activated, you can toggle between screens by pressing the F1 key. If you want to access the second screen from within a program, use the command POKE 788,0:POKE 789,192.

```
0 REM DUAL SCREEN 64 - GREG HAVENER
                                     :REM*146
10 PRINTCHR$(147)"PRESS F1 TO TOGGLE BETWE
   EN TWO SCREENS"                  :REM*222
20 FOR T=0 TO 134:READ D:CK=CK+D:POKE 4915
   2+T,D:NEXT                       :REM*158
30 IF CK<>15217 THENPRINT"ERROR IN DATA"
   :END                              :REM*176
40 POKE 788,0:POKE 789,192:PRINT"PRESS F1
   TO TOGGLE"                       :REM*17
50 DATA 173,1,197,201,1,208,12,238,2,197,7
   6,112,192,95,234,234,234,234     :REM*81
60 DATA 234,165,197,201,4,208,84,160,0,185
   ,0,4,141,0,198,185,0,193,153     :REM*251
70 DATA 0,4,173,0,198,153,0,193,185,0,5,14
   1,0,198,185,0,194,153,0,5,173    :REM*29
80 DATA 0,198,153,0,194,185,0,6,141,0,198,
   185,0,195,153,0,6,173,0,198     :REM*236
90 DATA 153,0,195,185,0,7,141,0,198,185,0,
   196,153,0,7,173,0,198,153,0     :REM*27
100 DATA 196,200,192,0,208,179,169,1,141,1
   ,197,76,49,234,173,2,197,201    :REM*43
110 DATA 32,208,246,169,0,141,1,197,169,0,
   141,2,197,76,19,192,0,169,0     :REM*59
120 DATA 141,0,0,0                 :REM*211
```

—GREG HAVENER, BIGFORK, MT

S5E3 C-128 VIDEO SWITCHEROO

Here's how C-128 owners can watch video on their monitors in 40-column mode, while at the same time going about computing chores in 80-columns.

First, collect your trusty old 1902 or 2002 monitor (or newer 1084); your C-128; a 2-into-1, Y-type cable with RCA-type connectors; and a VCR or camcorder. Plug the single-end RCA plug of the 2-into-1 cable into the Video Out connector on the video source and the dual ends of the cable into the Chroma and Luma inputs on the back of the monitor. (You can also run a single audio cable from the video source to the Video In on the monitor.) Plug the RGB Out connector on the computer into the RGB In of the monitor. Turn on your video source.

Now, you can watch either video or cable television (sent through your VCR) in 40-column mode, and during the commercials (or scary parts) switch back to the 80-column word processor you're using to write that letter to Magic.

—TIM WALSH, PETERBOROUGH, NH ■

Commodore
M A G A Z I N E

RUN

THE **COMMODORE** 64 / 128 USER'S GUIDE

March/April 1992
An IDG
Communications
Publication

**CONTEST
WINNERS
ANNOUNCED!**

Stamp Out Programming Bugs!

8 Easy Steps To Perfect Code

**Add Mega-Memory
To Your Commodore**

**A New Tool Makes
Graphics Fun**

**Fly High With
Flashcards 128**

**Puckish Action
With Ricochet**

Copy Relative Files

***SPECIAL:* Tax Update**



U.S.A. \$3.95
CANADA \$4.95

MAGIC

These exciting routines put more color into your programs, make two-key combinations easier to press and add a word-wrap feature to the C-64 and C-128.

By TIM WALSH

\$5E4 WHICH FILE WAS LAST?

Whenever you need to know the name of the last file loaded from disk, the answer is just a SYS command away. Entering either of the following commands in Program or Direct mode will print the last filename to the screen:

C-64: SYS 62913
C-128: SYS 62753

—HAROLD BENTLEY, HILLSBORO, MO

\$5E5 RESTORE LINE 64

C-128 users have long relied on Basic 7.0's Restore command, which lets data be read into memory beginning at a specified line number. This is essential for programs, such as multiple-choice tests, that must branch to specific Data statements based on user input.

Restore Line 64 brings the convenience of the Restore command to Basic 2.0 on the C-64. When activated, it uses the following syntax:

SYS 49152, {line #}

Line # can be either a numeral or a variable that holds a numeral. As with the Basic 7.0 version of the routine, Restore Line 64 works only within Program mode.

```
0 REM RESTORE LINE 64 - MICHAEL MYERS
10 FOR T=49152 TO 49219:READ D:POKE T,D:CK
   =CK+D:NEXT
20 IF CK <> 10486 THEN PRINT"ERROR IN DATA
   ...":END
30 PRINTCHR$(147)"RESTORE LINE 64 ACTIVE!"
40 PRINT"ENTER SYS 49152, LINE #"
50 DATA 32,253,174,32,138,173,32,247,183,1
   32,253,133,254,165,43,133,251
60 DATA 165,44,133,252,160,2,177,251,197,2
   53,208,19,200,177,251,197,254
70 DATA 208,12,56,165,251,233,1,164,252,13
   3,65,132,66,96,160,0,177,251
80 DATA 72,200,177,251,240,8,133,252,104,1
   33,251,184,80,211,104,96
```

—MICHAEL MYERS, BEARDSTOWN, IL

\$5E6 DISK ACCESS FLASHER 64

During disk saves and loads, C-64 programs usually don't change the screen display. Disk Access Flasher 64 will liven up your programs by cycling shifted characters through various colors whenever disk activity takes place.

The routine activates the C-64's extended background-color mode. You can change the default cycling colors with the following commands:

POKE 842,C1:POKE 855,C2

C1 and C2 are color values from 0-15. Using similar syntax, POKE 886,C3 and POKE 905,C4 (where the values of C3 and C4 are also from 0-15) would change the cycling colors again.

Disk Access Flasher works with all Commodore disk drives, including the 1581. A clearly marked demo at the end of the routine lets you see it in action, saving and verifying itself on disk.

```
0 REM DISK ACCESS FLASHER - RICHARD PENN
10 A=65535:B=56334:POKE1,55:POKEB,0:POKE95
   ,0:POKE96,160:POKE90,255:POKE91,255
20 POKE88,255:POKE89,255:SYS41919:POKEA,PE
   EK(A):POKEB,1:POKEB-10,149:POKEB-9,66
30 FORU=820TO911:READQ:POKEU,Q:CK=CK+Q:NEX
   T:FORT=251TO254:POKET,0:NEXT:POKE2,0
40 IF CK<>12073THENPRINT"ERROR IN DATA..."
   :END
50 POKE60947,76:POKE60948,52:POKE60949,3:P
   OKE60893,76:POKE60894,94:POKE60895,3
60 DATA134,2,166,251,232,134,251,224,254,2
   08,15,165,252,73,1,133,252,201
70 DATA1,240,13,169,2,141,34,208,166,2,120
   ,169,0,76,22,238,169,3
80 DATA141,34,208,76,78,3,133,253,134,2,16
   6,254,232,134,254,224,254,208
90 DATA15,165,252,73,1,133,252,201,1,240,1
   9,169,2,141,34,208,165,253
100 DATA166,2,36,148,48,3,76,225,237,76,23
   0,237,169,3,141,34,208,76,122,3
110 REM DEMO LINES BELOW
120 POKE 1,53:POKE53265,11:POKE53280,0:POK
   E53281,0:POKE53282,2:POKE53283,2
130 PRINTCHR$(147)CHR$(5)CHR$(18)"DISK ACC
   ESS FLASHER{13 SPACES}"
140 PRINTCHR$(19)CHR$(154)TAB(32)"{SHFT L}
   {SHFT O}{SHFT A}{SHFT D}{SHFT I}{SHFT
   N}{SHFT G}"CHR$(18)" ":POKE53265,91
150 SAVE"@0:TEST",8:VERIFY"TEST",8
```

—RICHARD PENN, MONTREAL, QUEBEC

\$5E7 ESCAPE/BACK-ARROW SCREEN COLORS 128

Looking for another addition to your collection of C-128 routines? Here's a new escape-key routine. When run, it defines ESCAPE/BACK-ARROW to cycle through the C-128's 80-column screen colors. As with any escape-key sequence, release the ESCAPE key before pressing the BACK-ARROW key.


```

0 REM ESC/BACKARROW COLORS 128 - CHUCK SAR
  ACENO :REM*54
10 FOR T=4298 TO 4338:READ D:POKE T,D:NEXT
  :REM*69
20 DATA 169,213,141,56,3,169,16,141,57,3,9
  6,201,95,240,3,76,193,201,162 :REM*88
30 DATA 26,142,0,214,172,1,214,192,255,240
  ,5,200,140,1,214,96,160,240,140:REM*119
40 DATA 1,214,96 :REM*97
50 SYS 4298:END :REM*174

```

—CHUCK SARACENO, MILFORD, NH

S5E8 COLOR SYS 64

Here's a similar routine for the C-64. Color SYS 64 replaces the two pokes needed to change the screen and border colors with a single SYS command. When the routine is in memory, you can change the colors with just a SYS 49220,S,B command (where S is the screen color and B is the border color). Color SYS can be used in either Direct mode or your own programs.

```

0 REM SYS COLOR 64 - MICHAEL MYERS :REM*73
10 AD=49220:FOR T=AD TO AD+18:READ D:CK=CK
  +D:POKE T,D:NEXT :REM*4
20 IF CK<>2525 THENPRINT"ERROR IN DATA..."
  :END :REM*183
30 PRINTCHR$(147)"TO USE, ENTER SYS ";AD;"
  ,SCREEN,BORDER" :REM*156
40 DATA 32,253,174,32,158,183,142,33,208,3
  2,253,174,32,158,183,142,32,208,96
  :REM*102

```

—MICHAEL MYERS, BEARDSTOWN, IL

S5E9 HANDY KEY 64

Children and others first learning to use the C-64 can benefit from Handy Key 64. When run, this short machine language routine makes the computer "remember" that the CONTROL, COMMODORE or SHIFT key has been pressed, and it displays the key's name in the upper-right corner of the screen until another key is pressed. The second keypress activates the two-key function just as if the keys were pressed simultaneously. Pressing the SHIFT and INSERT-DELETE keys in sequence clears the screen. Handy Key's design makes it a great teaching routine for youngsters.

```

0 REM HANDY KEY 64 - EUGENE WOODS :REM*16
10 FOR T=820 TO 1018:READ D:CK=CK+D:POKE T
  ,D:NEXT :REM*3
20 IF CK <> 24005 THEN PRINT"ERROR IN DATA
  ...":END :REM*206
30 PRINT"HANDY KEY ACTIVE!":SYS 820
  :REM*188
40 DATA 173,144,2,205,208,3,240,22,205,206
  ,3,240,9,141,206,3,173,143,2 :REM*46
50 DATA 141,205,3,173,207,3,174,208,3,208,
  6,173,205,3,174,206,3,120,141 :REM*98
60 DATA 143,2,142,144,2,88,96,173,141,2,24
  0,67,205,142,2,240,62,205,209 :REM*71
70 DATA 3,240,71,162,20,201,4,240,12,162,1
  3,201,2,240,6,162,6,201,1,208 :REM*177
80 DATA 39,72,173,209,3,208,11,160,7,185,3
  2,4,153,230,3,136,208,247,104 :REM*100
90 DATA 141,209,3,160,7,189,210,3,153,32,4
  ,173,134,2,153,32,216,202,136 :REM*235

```

```

100 DATA 208,240,173,209,3,240,28,141,141,
  2,165,203,201,64,240,19,169,0 :REM*111
110 DATA 141,209,3,141,142,2,160,7,185,230
  ,3,153,32,4,136,208,247,108 :REM*50
120 DATA 205,3,72,235,97,3,0,160,147,136,1
  37,134,148,160,160,131,143,141:REM*100
130 DATA 141,160,160,131,143,142,148,146,1
  43,140,0,0,255,0,255,0,255,0 :REM*132
140 DATA 255,0,255,0,255,0,255,0,255,0,255
  ,0,255 :REM*53

```

—EUGENE WOODS, SWEET HOME, OR

S5EA WORD WRAP PLUS 64/128

If you need a word-wrap utility that works on both the C-64 and the C-128 in either 40- or 80-Column mode, look no further. When run, Word Wrap Plus determines which computer it's operating on and configures itself accordingly. Then it prints to the screen the text that's within quotes in lines 10 and 20 and defined as A\$. After every six or seven lines, you'll be prompted to press RETURN to continue. The routine's design makes it handy for telecommunications, short text readers and anywhere else that word-wrap is needed. Naturally, you can change the text defined in A\$ to your own personalized message.

```

0 REM WORD WRAP PLUS 64/128 - RICHARD WINT
  ERS :REM*107
10 A$="PLACE YOUR TEXT HERE. YOU'LL NOTICE
  THAT WORDS WON'T BE BROKEN WHEN"
  :REM*66
20 A$=A$+" PRINTED TO THE SCREEN WITH WORD
  WRAP PLUS FOR THE 64 & 128. " :REM*177
30 FL=0:WD$="" :REM*21
40 L=LEN(A$):X=1 :REM*225
50 L$=MID$(A$,X,1):WD$=WD$+L$:X=X+1:REM*200
60 IF L$=" " OR X>L THEN GOTO 80 :REM*116
70 GOTO 50 :REM*200
80 IF FL=0{2 SPACES}THEN GOSUB 130:REM FIR
  ST TIME :REM*1
90 IF FL<>0 THEN GOSUB 210:REM SUBSEQUENT
  PRINTING :REM*205
100 FL=1:WD$="" :REM*67
110 IF X<=L THEN GOTO 50 :REM*20
120 GOTO 40 :REM*248
130 POKE981,15 :REM*106
140 POKE65280,0 :REM*229
150 SY=128:SC=40:CC=236:CL=235 :REM*141
160 IF PEEK(65280) <> 0 THEN SY=64:REM*96
170 IF PEEK(215) = 128 THEN SC=80:REM*240
180 IF SY=64 THEN CC=211:CL=214 :REM*134
190 PRINT CHR$(147); :REM*111
200 GOTO 210 :REM*11
210 PRINT CHR$((POS(.)+LEN(WD$)>SC)*-13);
  :REM*252
220 PRINT WD$; :REM*162
230 IF PEEK(CL)<4 THEN RETURN :REM*195
240 IF PEEK(CC)<SC-7 THEN RETURN :REM*157
250 PRINT:PRINTTAB(10)"PRESS <RETURN> TO C
  ONTINUE"; :REM*120
260 GET KY$:IF KY$="" THEN GOTO 260
  :REM*253
270 IF KY$<>CHR$(13) THEN GOTO 260:REM*102
280 PRINT CHR$(147); :REM*201
290 RETURN :REM*177

```

—RICHARD WINTERS, APO, NY ■

Commodore[®]
MAGAZINE

RUN

THE **COMMODORE** 64 / 128 USER'S GUIDE

May/June 1992
An IDG
Communications
Publication

WIN A 40-MEG
HARD DRIVE IN
**RUN's \$2000
Contest!**
See p. 30 for details

Discover the Online World of

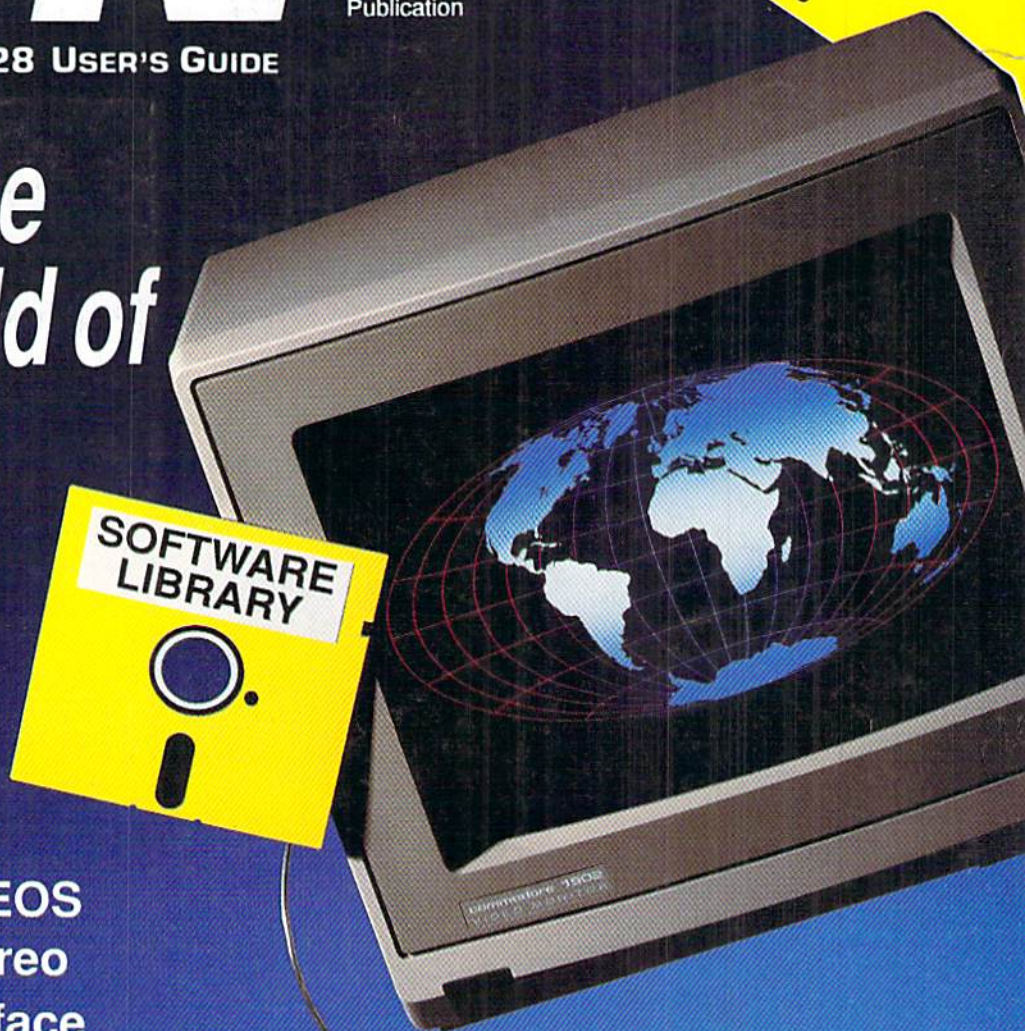
- ▶ Modems
- ▶ BBSs
- ▶ Terminals
- ▶ The Nets

REVIEWS:

- Perfect Print for GEOS
- SID Symphony Stereo
- SwiftLink-232 Interface

PLUS:

STOCK MARKET 64
TRAVERSE 64
SUNDIAL 128



U.S.A. \$3.95
CANADA \$4.95

MAGIC

These handy tricks let you save binary files in C-64 mode, sample the Commodore's musical talents and see page breaks in your program listings.

By TIM WALSH

\$5EB PAGE BREAKS 64

If you're running low on printer paper, or simply want to get a better idea of your program listing's length, then type in Page Breaks 64. This terrific programmer's utility shows you exactly how many sheets of paper the printed listing will use before you print it out.

Page Breaks 64 works by modifying the C-64 List command. After typing in and saving the following program to disk, run it to activate the List command modification. When the program is active and you issue the List command, a line of hyphens appears across the screen every 66 lines (the length of a standard 8 1/2 x 11-inch sheet). To prevent sending the lines to the printer, always press the RUN/STOP-RESTORE key combination before listing to the printer. To reactivate Page Breaks 64, enter SYS 49152.

```
Ø REM LIST PAGE BREAKS 64 - RICHARD PENN
                                     :REM*7Ø
1Ø A=65535:POKE 1,55:POKE 56334,Ø:POKE 95,
  Ø:POKE 96,16Ø:POKE 9Ø,255:POKE 91,255
                                     :REM*121
2Ø POKE 88,255:POKE 89,255:SYS 41919:POKE
  A,PEEK(A):POKE 56334,1
                                     :REM*2Ø4
3Ø POKE 56324,149:POKE 56325,66
                                     :REM*155
4Ø FOR U=49152 TO 49219:READ Q:POKE U,Q:CK
  =CK+Q:NEXT
                                     :REM*34
5Ø IF CK <> 784Ø THEN PRINT"ERROR IN DATA.
  ..":END
                                     :REM*227
6Ø A=48589:B=42683:POKE A,76:POKE A+1,5:PO
  KE A+2,192
                                     :REM*246
7Ø POKE B,76:POKE B+1,53:POKE B+2,192:SYS4
  9152:PRINT"PAGE BREAKS INSTALLED"
                                     :REM*155
8Ø DATA 169,53,133,1,96,72,138,72,23Ø,2,16
  5,2,2Ø1,67,24Ø,1Ø,1Ø4,17Ø
                                     :REM*243
9Ø DATA 1Ø4,133,98,134,99,76,2Ø9,189,169,1
  3,32,21Ø,255,169,45,162,4Ø,32
                                     :REM*41
1ØØ DATA 21Ø,255,2Ø2,2Ø8,25Ø,169,13,32,21Ø
  ,255,169,Ø,133,2,76,16,192,8
                                     :REM*78
11Ø DATA 72,169,Ø,133,2,1Ø4,4Ø,1Ø4,1Ø4,165
  ,2Ø,76,191,166
                                     :REM*211
```

—RICHARD PENN, MONTREAL, QUEBEC

\$5EC BINARY FILE SAVER 64

While C-128 users have the BSAVE command for saving areas of memory to disk as binary files, C-64 users are out of luck. Binary File Saver 64 is a short utility that C-64 users can use to copy any specified area of memory to disk.

You can use this utility to make copies of pure machine language files that have been loaded into memory from Direct mode or from Basic loaders. Just run Binary File Saver 64 and answer the starting and ending address prompts. Next, make certain you have a formatted work disk in the drive, and the

specified area of memory will be saved as a binary file to the disk. While the program is designed as a C-64 utility, it also works great in 128 mode!

```
Ø REM MEMORY DISK SAVER 64 - JOHN DAHLSTRO
  M
                                     :REM*94
1Ø INPUT"STARTING ADDRESS";A
                                     :REM*215
2Ø INPUT "ENDING ADDRESS";E
                                     :REM*163
3Ø INPUT"ENTER FILENAME";F$:IF F$="" THEN
  3Ø
                                     :REM*24Ø
4Ø OPEN8,8,8,F$+",P,W"
                                     :REM*1Ø7
5Ø C=INT(A/256):B=A-C*256:PRINT#8,CHR$(B);
  CHR$(C);
                                     :REM*144
6Ø PRINT#8,CHR$(PEEK(A));
                                     :REM*254
7Ø A=A+1:IF A>E THEN CLOSE8:END
                                     :REM*17Ø
8Ø GOTO 6Ø
                                     :REM*212
```

—JOHN DAHLSTROM, WOODHULL, IL

\$5ED NOTE SAMPLER 128

If you're interested in experimenting with music on your C-128, then take a few minutes and type in Note Sampler 128. Not only will this program help you learn about the Commodore 128's note-playing capabilities, but it also lets you sample musical attributes, such as various octaves and durations.

Type in Note Sampler 128 using RUN's Checksum and save it to disk. When you run the program, press the letter of one of the attributes, followed by the letter of a note. The program will display a message if an illegal key is pressed.

```
Ø REM NOTE SAMPLER 128 - GENE MILLER
                                     :REM*68
1Ø SCNCLR: PRINT"NOTE SAMPLER 128
                                     :REM*1Ø4
2Ø PRINT:PRINT"ACTIVE KEYS ARE: C D E F G
  A B "
                                     :REM*176
3Ø PRINT:PRINT"MUSICAL FUNCTIONS:"
                                     :REM*23Ø
4Ø PRINT:PRINT"T=ENVELOPE"
                                     :REM*8Ø
5Ø PRINT"O=OCTAVE"
                                     :REM*158
6Ø PRINT"U=VOLUME"
                                     :REM*63
7Ø PRINT"V=VOICE"
                                     :REM*119
8Ø PRINT"W=WHOLE"
                                     :REM*221
9Ø PRINT"H=HALF"
                                     :REM*1Ø8
1ØØ PRINT"Q=QUARTER"
                                     :REM*195
11Ø PRINT"I=EIGHTH"
                                     :REM*133
12Ø PRINT"S=SIXTEENTH"
                                     :REM*145
13Ø PRINT:PRINT"ENTER A FUNCTION AND A NOT
  E"
                                     :REM*183
14Ø TRAP 15Ø:GETKEY$;PLAY"M"+A$:GOTO 14Ø
                                     :REM*239
15Ø IF ER=3ØØ THEN END:ELSE PRINT"{HOME}"
                                     :REM*192
16Ø PRINT"TRY ANOTHER KEY!":SLEEP 2
                                     :REM*73
17Ø GOTO 1Ø
                                     :REM*39
```

—GENE MILLER, SAN JOSE, CA ■

Commodore[®]
MAGAZINE

RUN

THE **COMMODORE 64/128** USER'S GUIDE

July/August 1992
An IDG
Communications
Publication

**WIN
GREAT PRIZES IN
RUN's \$2000
Summer Giveaway!**
SEE P. 28 FOR DETAILS

10 Software Bargains

*Shareware &
Freeware*

GEOS Primer
Part I

**Caring For Your
Commodore**

Plus:

- **ROUNDBALL ROUNDUP**
- **LEAPFROG**
- **BOWL 'N' SCORE**
- **LOOK AND LOAD**

SHAREWARE
PUBLIC DOMAIN



U.S.A. \$3.95
CANADA \$4.95

MAGIC

Save the contents of your screen to disk, keep track of your disk drives and flash messages in either mode.

By TIM WALSH

\$5EE SCREEN PRINTER 64

While recently using the assembly language monitor Supermon v2, I thought it would be nice to write a memory-resident screen print utility. That way, I could make a hard copy of the assembly code I was developing.

Screen Print 64 is the result of my efforts. This program lets you send the current screen to the printer with a press of the CONTROL and LEFT-ARROW keys. After you've typed in the listing using RUN's Checksum on page 45 and saved it to disk, run it to activate the CONTROL/LEFT-ARROW sequence.

```
Ø REM SCREEN PRINT 64 - KELLY KIPFERL
:REM*249
1Ø FOR T=49152 TO 49368:READ D:CK=CK+D:POK
  E T,D:NEXT :REM*84
2Ø IF CK <> 26569 THEN PRINT"ERROR IN DATA
  ...":END :REM*9Ø
3Ø PRINTCHR$(147)"PRESS CONTROL/BACKARROW
  TO PRINT" :REM*15Ø
4Ø SYS 49329 :REM*241
5Ø DATA 165,2Ø3,2Ø5,59,3,24Ø,7,141,59,3,2Ø
  1,57,24Ø,3,1Ø8,254,3,169,Ø :REM*94
6Ø DATA 162,8,16Ø,62,32,189,255,169,1,162,
  4,16Ø,255,32,186,255,32,192 :REM*89
7Ø DATA 255,173,136,2,133,255,169,Ø,133,25
  4,141,253,3,166,184,32,2Ø1 :REM*189
8Ø DATA 255,162,Ø,16Ø,Ø,177,254,2Ø1,128,14
  4,6,141,253,3,56,233,128,2Ø1 :REM*171
9Ø DATA 96,144,7,24,1Ø5,64,2Ø1,96,176,18,2
  Ø1,64,144,7,24,1Ø5,32,2Ø1,64 :REM*231
1ØØ DATA 176,7,2Ø1,32,176,3,24,1Ø5,64,141,
  252,3,173,253,3,2Ø1,Ø,24Ø,5 :REM*121
11Ø DATA 169,18,32,21Ø,255,173,252,3,32,21
  Ø,255,173,253,3,2Ø1,Ø,24Ø,1Ø :REM*11Ø
12Ø DATA 169,146,32,21Ø,255,169,Ø,141,253,
  3,2ØØ,192,4Ø,144,172,169,13,32 :REM*99
13Ø DATA 21Ø,255,24,165,254,1Ø5,4Ø,133,254
  ,165,255,1Ø5,Ø,133,255,232,224:REM*179
14Ø DATA 25,144,147,32,2Ø4,255,169,1,32,19
  5,255,1Ø8,254,3,173,2Ø,3,141 :REM*183
15Ø DATA 254,3,173,21,3,141,255,3,12Ø,169,
  Ø,141,2Ø,3,169,192,141,21,3,88 :REM*94
16Ø DATA 96,12Ø,173,254,3,141,2Ø,3,173,255
  ,3,141,21,3,88,96 :REM*151
```

—KELLY KIPFERL, HORSEHEADS, NY

\$5EF DRIVE FINDER 64/128

If you're looking to add a unique drive identifying routine to your programs, Drive Finder 64 is for you. It's a one-of-a-kind program that shows how many drives are connected to your Commodore 64 or 128.

After typing in the program using RUN's Checksum on page 45 and saving it to disk, you can run it in either 64 or 128 mode. The program then reads and lists each drive con-

nected to your computer and its type, when identifiable, all in the span of a few seconds.

```
Ø REM DRIVE FINDER 64/128 - WARD SHRAKE
:REM*69
1Ø DIM DD(11),DD$(11):PRINT"CURRENT DRIVE
  IS DEVICE";PEEK(186);"{CRSR LF}."{CRSR D
  N}" :REM*72
2Ø FORDD=8 TO 11:OPEN 15,DD,15:CLOSE 15
  :REM*37
3Ø PRINT"DEVICE NUMBER ";RIGHT$(STR$(DD),2
  ); :REM*13Ø
4Ø DD(DD)=ABS(ST) :REM*155
5Ø IFDD(DD)<125THENPRINT" IS PRESENT."
  :REM*1Ø1
6Ø IFDD(DD)>124THENPRINT" IS NOT HOOKED UP
  ." :REM*89
7Ø NEXT :REM*2ØØ
8Ø PRINT"PLEASE WAIT..." :REM*2Ø9
9Ø FORDD=8TO11 :REM*2Ø2
1ØØ IFDD(DD)>124THEN17Ø :REM*16Ø
11Ø OPEN15,DD,15,"U:" :REM*45
12Ø TI$="ØØØØØØ" :REM*116
13Ø IF TI$<"ØØØØØØ2"THEN13Ø :REM*1Ø4
14Ø INPUT#15,X,DD$(DD):CLOSE15 :REM*132
15Ø IFDD$(DD)="OK"THENPRINT"TWO DRIVE";DD;
  "{CRSR LF}'S FOUND, MODELS UNSURE.":GO
  TO17Ø :REM*1Ø7
16Ø PRINT"DISK DRIVE";RIGHT$(STR$(DD),2);"
  IS A MODEL ";RIGHT$(DD$(DD),4);"." :REM*133
17Ø NEXT :REM*45
```

—WARD SHRAKE, COVINA, CA

\$5FØ FLASHING PRINT 64/128

You may occasionally notice that some programs have messages that flash on the screen until a key is pressed or some other action is performed. This routine prints a message on the screen that flashes on and off in a reversed print until a key is pressed. By studying the lines of Basic code used to print the routine and the for/next loop that cycles the reversed text, you will see that it's a simple process. Use this routine in your own programs to provide a lively bit of animated text.

```
Ø REM FLASHING PRINT 64/128 - RAFAEL J. DI
  AZ :REM*216
1Ø R$=CHR$(18):S$="PRESS A KEY!" :REM*85
2Ø PRINTR$;S$ :REM*37
3Ø GET A$:IF A$="" THEN FOR I=1 TO 35Ø:NEX
  T:IF A$<>"" THEN 5Ø :REM*176
4Ø PRINT"{CRSR UP}";:PRINTS$:IF A$="" THEN
  FOR I=1 TO 2ØØ:NEXT:PRINT"{CRSR UP}";:
  GOTO 2Ø :REM*197
5Ø IF A$<>"" THEN PRINT"THANK YOU!"
  :REM*232
```

—RAFAEL DIAZ, HOFFMAN ESTATES, IL ■

RUN

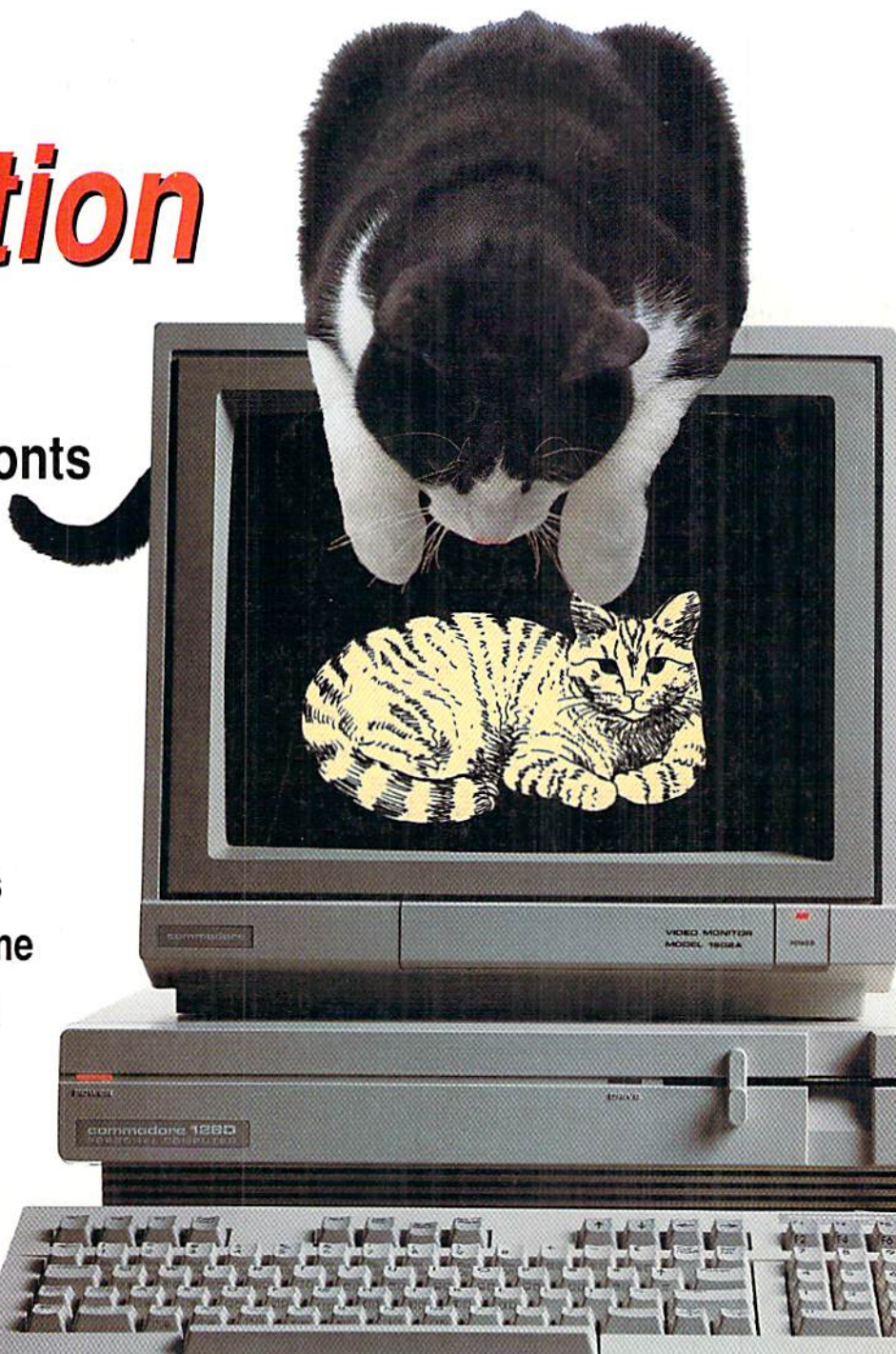
October 1992
An IDG
Communications
Publication

GEOS *Purr-fection*

- ▶ Add Your Favorite Pictures
- ▶ Choose the Right Fonts
- ▶ Discover a New geoPaint Tool
- ▶ Play geoGames

Plus:

- Organize Your Music Tapes
- Classic C-128 Strategy Game
- Program for Puzzle-Lovers
- Pop-up Desk Accessories



U.S.A. \$3.95
CANADA \$4.95

MAGIC

Give your C-64 double RAMdisk power, experiment with circle patterns on your C-128 screen and create text files of machine language monitor output.

By TIM WALSH

\$5F1 DUAL RAMDISK 64

Even if you don't own a Commodore 1764 or other RAM expansion unit for your C-64, you still have access to a RAM drive. As its name implies, Dual RAMdisk 64 will give your unexpanded C-64 two RAMdisks, each capable of holding programs up to 8K in length, for a total of 16K!

After typing in and saving Dual RAMdisk 64, running it reveals two sets of interrupt-driven commands that remain hidden in the background until needed. SYS 49317 saves a program into the first RAMdisk, while SYS 49335 retrieves it. Similarly, SYS 49359 and SYS 49374, respectively, perform the same functions for the second RAMdisk.

Be certain to save a file to the second RAMdisk before saving one to the first. Otherwise, you might not be able to retrieve a program from the first RAMdisk.

```
0 REM DUAL RAM DISK 64 - RICHARD PENN
10 FOR T=49152 TO 49391:READ D:POKE T,D:CK
   =CK+D:NEXT
20 IF CK>35806 THEN PRINT"ERROR IN DATA..
   .":END
30 PRINTCHR$(147)"DUAL RAM DISK INSTALLED"
   :PRINT:PRINT"SYS 49137 - SAVE 1"
40 PRINT"SYS 49335 - LOAD 1":PRINT:PRINT"S
   YS 49359 - SAVE 2"
50 PRINT"SYS 49374 - LOAD 2":PRINT:PRINT"N
   OTE: ALWAYS SAVE TO RAM 2 FIRST!"
60 DATA 165,46,201,41,176,65,201,40,208,6,
   165,45,201,1,176,55,165,43,133
70 DATA 251,165,44,133,252,165,45,141,252,
   3,165,46,141,253,3,169,0,133
80 DATA 253,169,224,133,254,160,0,177,251,
   145,253,230,253,208,2,230,254
90 DATA 230,251,208,2,230,252,165,251,197,
   45,208,234,165,252,197,46,208
100 DATA 228,96,76,53,164,120,169,0,133,25
   1,169,160,133,252,165,43,133
110 DATA 253,165,44,133,254,169,53,133,1,1
   60,0,177,251,145,253,230,253
120 DATA 208,2,230,254,230,251,208,2,230,2
   52,165,253,205,250,3,208,233
130 DATA 165,254,205,251,3,208,226,169,55,
   133,1,173,250,3,133,45,173,251
140 DATA 3,133,46,88,165,55,164,56,133,51,
   132,52,165,45,164,46,133,47
150 DATA 132,48,133,49,132,50,96,169,160,1
   41,39,192,169,250,141,27,192
160 DATA 169,251,141,32,192,76,0,192,169,1
   60,141,82,192,169,250,141,118
170 DATA 192,141,134,192,169,251,141,125,1
   92,141,139,192,76,76,192,169
180 DATA 224,141,39,192,169,252,141,27,192
   ,169,253,76,177,192,169,224
```

```
190 DATA 141,82,192,169,252,141,118,192,14
   1,134,192,169,253,76,198,192 :REM*253
```

—RICHARD PENN, MONTREAL, QUEBEC

\$5F2 CIRCLE FUN 128

Among the C-128's Basic 7.0 graphics commands, Circle is one of the most powerful. Circle Fun 128 is a short program that creates four entertaining, eye-catching displays. Try experimenting with different values in the Circle commands in this program and watch the results.

```
0 REM CIRCLE FUN 128 - KEN HOKE
10 COLOR4,1:COLOR0,1:GRAPHIC1,1:COLOR1,2
20 X=80:Y=51:FORS=3 TO 5
30 RT=0:RD=50:RS=97:RE=50
40 FORZ=1 TO 13
50 CIRCLE1,X,Y,RD,RT,,,RT,360/S
60 RT=RT+9:RD=RD-3.7
70 NEXTZ
80 IF S=3 THEN Y=Y+RS
90 IFS=4 THEN Y=Y-97:X=X+(RE*3)
100 IFS=5 THEN Y=Y+RS
110 NEXTS
120 RT=0:FOR Z=1 TO 9:CIRCLE1,230,148,20,R
   E,,,RT,1:RT=RT+20:NEXT
```

—KENNETH HOKE, LOUISVILLE, KY

\$5F3 MONITOR FILE MAKER 128

Monitor File Maker 128 is an unusual utility that programmers should find helpful. The program runs from within Basic on the C-128, jumps to the built-in machine language monitor, creates a file, then allows you to exit back to Basic. The contents of the file are a word processor-compatible file of the machine language monitor's output.

After running it, enter a filename at the first prompt. Next, enter commands from within the machine language monitor to disassemble or examine files, then press the HOME key and press RETURN. The disk file is closed and you're now ready to load the file into your word processor.

```
0 REM C-128 MONITOR OUTPUT FILE MAKER - RA
   NDY WINCHESTER
10 INPUT"FILENAME";F$
20 PRINTCHR$(147)
30 PRINT"(HOME)G FA16F"
40 PRINT"OPEN 1,\"PEEK(186)\",2,\"+CHR$(34)+F
   $+\",S,W\"+CHR$(34)+\":CMD1:MONITOR"
50 POKE 208,3:POKE 842,145:POKE 843,19:POK
   E 844,17
```

—RANDY WINCHESTER, CAMBRIDGE, MA ■

RUN

November/December 1992
An IDG
Communications
Publication

MEGA DRIVES

- ▶ Faster ▶ More Capacity
- ▶ 1581-Compatible
- ▶ Improved Disk Commands
- ▶ Easy Device Swapping

GEOS:

- ▶ RAM Choices
- ▶ A New Paint Program
- ▶ Boot, Installation & Desktop Instructions

**The Easy Way to
Print Your Checks**

Plus:

- Yuletide Greetings
- 128 Word Game
- Bombs Away!
- Super Sort 64



U.S.A. \$3.95
CANADA \$4.95



MAGIC

*Monitor your Basic programs as they execute, line by line,
and save sections of memory to disk with a relocatable C-64 program.*

By TIM WALSH

\$5F4 EASY TRACER 64

EZ Tracer 64 lets you know which line your Basic program is executing so you can have an answer to that common question, "What is my program doing?" Like the TRON command on the C-128, this program gives your 64 a Trace-like command that monitors program activity by placing the line number on the screen of each line as it is executed. For clarity, the executing line number is preceded with an "IN."

After loading and running the listing, a SYS679 will enable it. To Disable EZTracer, just type SYS682.

```
0 REM JESS SOSNOSKI - EZTRACER 64 :REM*113
10 PRINTCHR$(147)"{CRSR DN}EZ TRACER-SYS 6
  79 ENABLES, SYS682 DISABLES :REM*37
20 DATA 76,183,2,173,79,228,141,8,3,173,80
  ,228,141,9,3,96,173,8,3,141,244 :REM*28
30 DATA 2,173,9,3,141,245,2,169,209,141,8,
  3,169,2,141,9,3,96,255,9,11,141 :REM*45
40 DATA 206,2,142,207,2,140,208,2,165,57,1
  66,58,224,255,240,3,32,194,189 :REM*86
50 DATA 169,32,32,210,255,173,206,2,174,20
  7,2,172,208,2,76,228,167,-1 :REM*110
60 READA:I=I+1:IFA>-1THENPOKE679+I-1,A:CK=
  CK+A*I:GOTO60 :REM*63
70 IF CK<>384505 THENPRINT"DATA ERROR!"
  :REM*31
604 BLOCKS FREE. :REM*119
```

—JESS SOSNOSKI, MOUNT CARMEL, PA

\$5F5 DOC WRITER/READER 64/128

Commodore users who upload files to BBS's and networks often like to include documentation. When a file is compressed using an archival program, such as Self-Disolving Arc (SDA) or LYNX, it's generally a good idea to have the documentation file in a form that can be displayed on the screen without the use of a word processor or text editor.

Documentation Writer/Reader consists of two listings that make this job easy. The first, Seq Documentation Maker 64/128, creates a sequentail file on disk. Just load and run this program, enter a filename for the sequential file and type in the documentation. If you want to see a cursor, type up-arrow (↑). When done, type a back-arrow (←) to close the file on disk.

Once the sequential file is on disk, the second listing, Seq Documentation Reader 64/128, will display its contents. Enter the filename at the prompt and the text will scroll across the screen. The next time you want to include docs on disk, be sure to include these short utilities for handling the text.

```
0 REM SEQ DOCUMENTATION MAKER 64/128 - AN
  THONY MATOUS :REM*206
10 C$="" :REM*222
20 PRINT"{SHFT CLR} ENTER A FILENAME"
  :REM*22
30 INPUT F$ :REM*154
```

```
40 OPEN2,8,2,F$+"",S,W" :REM*96
50 GET A$:IF A$="" THEN 50 :REM*13
60 IF A$="{LEFT ARROW}" THEN 90 :REM*121
70 IF A$="{UP ARROW}" THEN GOSUB 100 :REM*162
80 PRINTA$;:PRINT#2,A$;:PRINTC$;:GOTO50 :REM*178
90 CLOSE 2:END :REM*8
100 IF C$="" THEN C$="{CRSR LF}":RETURN :REM*33
110 C$="" :RETURN :REM*118
0 REM SEQ DOCUMENTATION READER 64/128 - AN
  THONY MATOUS :REM*157
10 PRINT"{SHFT CLR}ENTER FILENAME TO READ:
  " :REM*181
20 INPUT F$ :REM*144
30 OPEN2,8,4,F$+"",S,R" :REM*216
40 FOR L= 0 TO 1: GET#2,A$:PRINT A$;:L=ST
  :REM*18
50 GET B$:IF B$<>"" THEN GOSUB 60 :REM*109
60 NEXT L:CLOSE 2:END :REM*80
70 GET C$:IF C$="" THEN 70 :REM*81
80 RETURN :REM*222
```

—ANTHONY MATOUS, PENN RUN, PA

\$5F6 RELOCATABLE BSAVE 64

While C-64 utilities for easily saving sections of memory to disk (like BSAVE in C-128 Basic 7.0) have been published in Magic before, Relocatable BSAVE 64 is a great solution for programmers who need to do this. It is relocatable in memory, so you can alter its starting address to suit your needs by changing the value of AD to the desired location. Once you get it up and running, use the following command:

SYS ADDRESS, START, END, FILENAME, DEVICE

```
0 REM RELOCATABLE BSAVE 64 - JESS SOSNOSKI
  :REM*232
10 PRINTCHR$(147)"{CRSR DN}RELOCATABLE BSA
  VE 64" :REM*15
11 PRINT"SYS AD,START,END,"CHR$(34)"FILENA
  ME"CHR$(34)",DEVICE :REM*149
20 AD=679 :REM*50
30 DATA 32,253,174,32,158,173,32,247,183,1
  65,20,133,193,165,21,133 :REM*157
40 DATA 194,32,253,174,32,158,173,32,247,1
  83,165,20,133,174,165,21 :REM*23
50 DATA 133,175,32,253,174,32,212,225,32,2
  34,245,96,-1 :REM*251
60 READA:IFA>-1THENI=I+1:POKEAD+I-1,A:CK=C
  K+A*I:GOTO60 :REM*64
70 IFCK<>140847THENPRINT"DATA ERROR!"
  :REM*238
```

—JESS SOSNOSKI, MOUNT CARMEL, PA ■